

Resilience in Rheumatic and Musculoskeletal Diseases

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Abstract

Chronic conditions such as rheumatic diseases often carry a great burden, with pain, disability, and mood disorders ultimately leading to a poor quality of life. Resilience, defined as the skill to positively cope with stressful and critical events, could mediate the influence of rheumatic disease on patients' life and may have a role in withstanding it. While resilience could be in some cases an innate ability, it can also be acquired through a dynamic process. Accordingly, the concept of resilience has been gaining relevance lately and, since a more resilient approach could have a positive effect in the management of chronic diseases, implementing coping strategies should be a priority in everyday clinical practice. Here we review resilience and its potential beneficial role in inflammatory arthritis, connective tissue diseases, and fibromyalgia and assess its relationship with disease activity and mood disorder, and evaluating the possible strategies aimed at improving it.

Keywords: Resilience, Rheumatology, Psychology, Anxiety, Depression, Rheumatoid arthritis, Connective tissue diseases, Fibromyalgia

Resilience in Rheumatic and Musculoskeletal Diseases

Along the last decade, likewise in other fields, the concept of resilience has been gaining relevance in medicine and psychology where, although many different definitions have been proposed, it can be briefly described as the skill to positively cope with stressful life events [1]. Chronic conditions such as rheumatic and musculoskeletal diseases (RMD) have a great impact on the quality of life, and resilience can help to withstand RMD associated pain and disability [2]. Being influenced by a wide spectrum of variables such as age, gender, culture, sociological context, education, and personal experiences, resilience can be either an innate ability or it can be acquired through a dynamic process [1,3]. Some evidence suggests that patients with RMD may have more effective coping strategies in response to stressful life events due to adaptive responses to the chronicity of their condition [3,4] and, consequently, they might deal better with unexpected stressful experiences.

In this light, unsurprisingly, patients with inflammatory arthritis are more resilient than the general population towards unpredictable stressful situations such as the ongoing COVID-19 pandemic [5]. However, interventions able to strengthen the active process of resilience may reasonably improve the outcomes of RMD [6].

How to Assess Resilience

Several tools have been developed to measure resilience in different settings: Connor-Davidson Resilience Scale (CD-RISC), employed for subjects with Post Traumatic Stress Disorder [7]; the Resilience Scale for Adults (RSA), designed for adults in health and clinical psychology [8]; the Brief Resilience Scale, a short self-rating questionnaire which particularly assesses the ability to bounce back from adversity [9]; the Scale of Protective Factors (SPF) validated in a sample of nearly 1,000 college students [10]; Ego Resilience Scale used to evaluate resilience in non-psychiatric contexts [11]; the Academic Resilience

Scale (ARS-30), recently developed to assess resilience in academic contexts [12]; the Resilience Scale and its latest shortened 18 and 14-item version (RS-18 and RS-14) initially developed by Wagnild and Young in 1993 [13]. RS-18, in particular, has been successfully adapted and validated for chronic pain populations [14,15]. So far, only a few studies have evaluated resilience in patients with RMD and its relationship with pain, fatigue and mood disorders [2-6,15-21].

Resilience in Inflammatory Arthritis

Rheumatoid arthritis (RA) is a chronic, systemic, inflammatory disease characterized by pain and disability, requiring lifelong pharmacological treatment [22]. The relationship between pain and resilience is worth noting and should have a high priority for physician's attention as in RA chronic pain is one of the most widespread and challenging symptoms [23]. In both RA adult patients and younger subjects with juvenile idiopathic arthritis (JIA), high resilience positively affects mental health status, more than physical health, helping patients to have a higher sense of control of their disease, cope with pain and disability, and better comply with treatment [3,24-27]. In a multi-center, cross-sectional study on 305 Chinese RA patients, resilience had a positive impact on fatigue, a symptom dramatically reducing the quality of life in RA; indeed, resilience is a possible mediator between fatigue and perceived social support [24]. In a very recent report, Shaw et al. [3] interviewed 18 RA patients with an age of 27-80 years and disease duration of 5-41 years and evaluated their response to challenging situations. The study pointed out that RA patients could acquire resilience, moving from inability to mastery to handle the difficult situations through different strategies such as perseverance, exchanging social support, pursuing valued activities, flexibility, positive reframing, acceptance, humor, avoiding threatening thoughts, equanimity, and maintaining a sense of control. In a cross-sectional, multi-center study in which 298 RA Chinese patients were evaluated regarding the possible relationship between resilience, disease activity, physical and mental quality of life (QoL), Liu et al. reported that resilience could have a role as a mediator between mental QoL and disease activity; on the contrary, no association with physical QoL emerged [27]. Moreover, no direct significant relationship was found between resilience and disease activity in patients with arthritis or other RMD [2,28]. In particular, in the study by Brionez et al. on 294 ankylosing spondylitis patients, no correlation was found between active coping strategies and the Bath Ankylosing Spondylitis Disease Activity Index (BASDAI), a validated score used to assess disease activity in patients with spondyloarthritis; on the other hand, depression and the sensation of helplessness were responsible for the variability of disease reported

index among the enrolled subjects [29].

Resilience in Connective Tissue Diseases

Only a couple of studies have evaluated the role of resilience in patients with Sjögren's syndrome (SS), a chronic condition burdened by a greatly reduced quality of life and characterized by sicca symptoms, fatigue, and frequently also systemic manifestations [30]. Priori et al. [28] compared a group of 74 SS female patients with age and sex matched control group of healthy subjects, assessing resilience through the RS-14 questionnaire. Both healthy subjects and SS patients showed a moderate level of resilience. SS patients with a higher level of resilience had a better perception of their health, both mental and physical, less anxiety and depression, while no association was detected between resilience and disease duration, symptoms, activity, serological status, treatment or comorbidities, nor with socio-demographic features such as job or age. Nonetheless, the role of age on resilience is still controversial [31]. Rojas et al. [2] reported that SS patients older than 50 years of age tended to be the most resilient, suggesting that experiences and events in life could help to reach and maintain the ability to adapt well to stressful conditions. Similarly, in patients with Systemic Lupus Erythematosus (SLE), a chronic autoimmune disease characterized by systemic involvement with frequent life-threatening complications [32], resilience seemed to be related to age, with younger patients presenting the lowest resilience [2]. Cal et al. assessed resilience in 45 SLE patients through either Mini International Neuropsychiatric and the Wagnild and Young scales, showing that patients with the lowest score had a sensible risk of committing suicide, while the highest values of resilience were found among patients older than 35 years [33]. This has a great implication in clinical practice, as SLE mostly affects young women in their reproductive age. On the contrary, Garcia-Carrasco et al. reported that resilience level correlated with depression, but not with age or other socio-demographic features [34]. In a cross-sectional study of 40 female patients with SLE, Faria et al. [35] found out that resilience was associated with disease awareness and understanding, adhesion to treatment, and promotion of a more active and risk-avoiding lifestyle, as the less resilient patients were more likely to lose compliance to treatment over time and avoid some activities due to their disease. Thus, resilience could play a role in helping prevent flares and reduce the risk of irreversible damage in SLE patients.

In Systemic Sclerosis (SSc), a disease associated with noticeable facial and physical changes, bodily restriction, impairment in everyday activities, and overall poor quality of life, resilience could improve the ability to adapt to changes and to accept the disease and its burden [36].

Rojas et al. [2] reported that resilience was related to age and socio-economical status: indeed, younger patients with lower income were also more likely to be less resilient, while patients older than 50 years of age with a more active lifestyle and high socio-economical status showed the highest level of resilience. The possible role of biological factors in determining resilience was considered and the relationship between cytokine profile, symptom severity, and resilience measured using the BRS (Brief Resilience Score) was assessed in a group of 35 consecutively enrolled SSc patients [31]. Although no significant direct relationship was found between resilience and clinical features, patients with higher IL-6 levels had more severe symptoms and lower resilience score. These findings support the idea that an abnormal cytokines profile could impair stress response and, thus, be considered as a potential biologic explanation for the difference among patients in their ability to positively react to adverse situations and to the challenge posed by their disease.

Resilience in Fibromyalgia

Fibromyalgia (FM) is a chronic widespread pain syndrome. It is characterized by fatigue, sleep disturbances, morning stiffness, paresthesia, headache, mood disorders, memory problems, sicca syndrome, irritable bowel disease, and Raynaud's phenomenon. Its pathogenesis involves psychological, behavioral and social factors that also complicate its treatment. Psychologically, in patients with FM there is a generalized distress state. As we know resilience is profoundly related to a reaction to acute or chronic stress and is therefore involved in the stress response system in FM more specifically [37]. Recently, Iannuccelli et al. [5] described that FM patients have low levels of resilience. In particular, the study was conducted to analyze the effect of the novel coronavirus disease (COVID-19) pandemic on three different groups: 72 FM patients, 82 RA patients, and 40 healthy control (HC). HC featured the highest stress scores, followed by FM patients and then RA patients. FM patients showed lower resiliency when compared to RA patients and HC. Both anxiety and depression scores were significantly higher in FM patients compared to RA patients and HC, with no differences between the last two groups. As known, resilience is strictly involved in the stress response, and FM patients frequently have dysfunction of this system. Being resilient does not mean not experiencing stress but having the ability to withstand adversity and bounce back from difficult life events. The reduced resilience in FM can lead to the development of post-traumatic stress disorder, depression, and mood disorder and increases the vicious circle characteristic of FM. Learning adaptive coping strategies and improving acceptance capacity are some of the principal objectives in the management of FM. Interestingly, Braun et al. [38] recently described

better-coping characteristics and a less pro-inflammatory cytokine pattern in more resilient FM patients. A cohort of 156 FM patients was subdivided into four clusters named "maladaptive", "adaptive", "vulnerable", and "resilient" based on coping, pain, and psychological variables and gene expression of selected cytokines. The authors concluded that coping strategies and an anti-inflammatory cytokine pattern are associated with reduced disability and might promote resilience. These data also confirm the need for a personalized treatment that considers these factors. This process may require important lifestyle changes with cognitive/emotional/behavioral re-education to reach a good therapeutic result.

Resilience and Mood Disorders in RMD

Patients with chronic autoimmune diseases are particularly susceptible to developing mood disorders resulting in low quality of life. Disease activity, pain, fatigue, poor physical function, and disability alongside the sensation of social isolation and perception of not being understood are critical factors in provoking anxious-depressive symptoms in patients with RMD [39-42]. On the other hand, patients suffering from depression fail to fully embrace their disease, are less likely to comply with treatment in the long term, and are more prone to physical inactivity, thus enabling a vicious cycle ultimately leading to a worse prognosis [42]. More recently, an abnormal cytokine pattern has been considered as a possible cause for altered synaptic plasticity and neurotransmission, providing a biological reason for the high prevalence of anxiety and depression in RMD patients [43]. Being the ability to cope with stressful events, resilience has a strong relationship with anxious-depressive manifestations. It has been shown that the most resilient RMD patients are also less depressed, more likely to accept their disease and to comply with their treatment [28,33,34,44]. Thus, resilience has great relevance in preventing and managing anxiety and depression [45].

Interventions Aimed at Improving Resilience

Physical activity is of paramount importance in RMD, as chronic pain, fatigue, physical impairment, and mood disorders can lead patients to inactivity, muscle wasting, cardiovascular comorbidities, and further disability [46]. Regular exercise can improve fatigue, has a beneficial effect on mental and physical health, helps prevent and handle depressive disorders, and reduces overall cardiovascular risk, which is increased in patients with inflammatory chronic diseases such as RA, JIA and SLE [47-51].

Resilience in patients with chronic RMD, such as RA, SLE, SS, and SSS appears to be positively related to physical activity, as the most resilient patients show greater

durability, improved muscle strength and less fatigue perception [2,28]. Although improving resilience could be of great interest in RMD patients, studies on this matter are still lacking. Resilience improving strategies such as mentor-based and supportive-expressive programs [52], group intervention to enhance positive psychology-based styles of coping [53,54] and cognitive behavioral therapy have been shown to improve disease acceptance and adherence to treatment in patients with cancer [55]. The goal of these strategies is to acquire resilience by increasing self-esteem, optimism, and emotional communication, while at the same time avoiding catastrophizing thoughts and fear of the future using rational emotive behavior therapy [56]. Shaw et al. reported that patients with RA appear to be able to develop resilience through combined emotional and behavioral management strategies, as resilience is acquired in a complex and non-linear fashion as a response to new challenges and difficulties arising during the disease course, promoting self-preservation behavior and improving compliance to treatment [3]. Although a couple of studies have confirmed the overall efficacy of these strategies to improve resilience [57,58], the multimodal and complex nature of resilience, the lack of agreement over resilience definition, the heterogeneity of methodologies and interventions used do not allow to offer any recommendations for clinical practice [59]. New studies on this matter are needed.

In conclusion, resilience is a dynamic process of learning based on modifiable skills and behaviors. It can improve the ability of patients with chronic conditions such as RMD to cope with their lifelong disease. The attention on the topic is growing in many areas; in light of the beneficial effect of improving resilience in the management of chronic disease, more attention should be paid to assessing and implementing patients' coping strategies.

Role of the Authors

RP, FG, FR S, CI review the literature and wrote the manuscript; RP and FC revised the manuscript.

Conflict of Interest

The authors have no conflict of interest to declare.

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