



Research Progress on the Correlation between Psychological Factors and Vitiligo

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Abstract: Vitiligo is a volume damaging skin disease caused by the destruction of epidermal melanocytes (MC). Psychological factors are not only one of the predisposing factors for more patients with vitiligo, but also bring great mental pressure to patients and their families, reduce their quality of life, and are not conducive to the rehabilitation of vitiligo. This paper reviews the psychological investigation in patients with vitiligo by consulting and summarizing the literature to improve the clinical understanding of the psychological state of patients and their families. Ensuing more appropriate psychotherapy and interventions should improve the cure rate of vitiligo as well as the psychological state of patients and their families.

Keywords: Vitiligo, psychological factors, review

Introduction

Vitiligo is a volume damaging skin disease caused by the destruction of epidermal melanocytes (MC). The global incidence rate is about 0.5%-1.0%, showing an increasing trend year by year^[1]. It is a disfigurement skin disease with localized white spots on the skin and gradual expansion and spread as the main clinical manifestation. Although the disease is not painful or itchy, it erodes the healthy skin and soul of patients, seriously damages people's appearance, frustrates people's mental psychology, and affects their life, work, marriage, and social networking. It is one of the world's most difficult diseases^[2]. Vitiligo not only seriously affects the mental health and social activities of patients but also brings great economic pressure to patients and their families. The pathogenesis of vitiligo has put forward the theory of oxidative stress, autoimmunity, and neurochemical factors of melanocytes, especially the role of neuropsychiatric factors in the pathogenesis of patients^[3].

Relationship between Psychological Factors and Vitiligo

Vitiligo is a polygenic skin disease that can occur at any age. With the popularization of the bio-psychosocial medical model, the role of neuromental factors in the pathogenesis of vitiligo has attracted more and more attention. There are more and more studies on the relationship between vitiligo,

neuropsychiatric factors, and immune factors^[3]. Vitiligo has a higher incidence rate among relatives who are directly related by blood, which provides strong evidence between vitiligo and heredity. The incidence rate of vitiligo in the general population is about 1%, but the risk of siblings suffering from the disease is 6%, while the risk of identical twins is 23%^[4]. Family cohesion also occurs in children with vitiligo, and the incidence of vitiligo in children has a higher correlation with genetics^[5]. The common source of skin and nervous system in development determines the connection between psychology and skin, which is very common in daily life. For example, most people will blush when they feel uneasy, and their skin will be uncomfortable when they are excited. Vitiligo is often considered to be caused by autoimmune deficiency; The metabolites of catecholamine and serotonin directly affect depigmentation, anxiety, and depression, resulting in damage to patients' autoimmune and endocrine systems. Serotonin plays a very important role in depression and related symptoms. Therefore, vitiligo is associated with depression and anxiety. An important product secreted by the pineal gland is melatonin, which is a universal regulator of important human functions and biological rhythm. Psychosis, neurosis, depression, and immunopathology are the aspects of the circadian, seasonal, and annual rhythm disorder of this hormone synthesis.



Clinical and experimental studies have shown that melatonin is a link in the body's stress defense mechanism, with antioxidant and immunomodulatory properties. The density and number of low-affinity nerve growth factor receptor (NGFR) on nerve fibers or nerve cells in the skin lesions of patients with vitiligo decreased, suggesting that peripheral nerves release nerve growth factor (NGF) to overexpress NGFR on melanocytes, which may lead to the damage of melanocytes. Zhang Shubin and others treated vitiligo with autologous epidermal cell transplantation and nerve growth factor, which has a significant effect, suggesting that NGF is related to the pathogenesis of vitiligo and may play a local therapeutic role by stimulating the proliferation of melanocytes. In 1998, Papadopoulos and others took ^[6]"how life events stimulate vitiligo" as the research starting point, selected 100 patients with a medical history of fewer than 3 years, and compared them with patients with pigmented diseases unrelated to psychological factors. The results showed that compared with the control group, patients with vitiligo experienced a high incidence of stressful life events before onset (especially loss or divorce of relatives, more trauma and diseases, and changes in eating and sleeping habits). More than 40% of patients had relatives or good friends died before the onset of vitiligo, more than 25% had the change of residence (i.e. the change of living environment characterized by the loss of friends, family, and familiar environment), 25%-35% of patients had depression before the onset of vitiligo, and 16% of patients had sexual problems. Mathew's ^[7] reported that several patients immigrated to the United States and became ill due to the difficulties caused by adapting to the new environment and losing their family and social support system. Although the exact way of the interaction between traumatic experience and depression and vitiligo is unclear, there is no doubt that the two interact. Mental and psychological factors can stimulate vitiligo.

Long-term chronic psychological stress causes the imbalance of hypothalamic-pituitary-adrenocortical (HPA) axis reactivity, reduces the number of circulating leukocytes, and inhibits the immune response. At the same time, the imbalance of reactivity of the HPA axis can release excessive cortisol. The increase of serum cortisol in turn can inhibit the synthesis and secretion of IL-1 and TNF- α , and then inhibit the differentiation of normal human melanocytes and tyrosinase activation, leading to the occurrence of vitiligo. Some scholars further confirmed the damage of T cells, monocytes, various proinflammatory cytokines, and autoantibodies to melanocytes by peripheral blood and skin histopathology of patients with vitiligo. Adverse psychological stress factors of patients can induce or aggravate vitiligo by reducing the immune function of the body. Among pigmented diseases, anxiety, depression and somatoform disorders have the highest prevalence, especially vitiligo and acquired skin macular pigmentation

(ADMH). The prevalence of anxiety and depression is related to the severity and activity of the disease. Future research needs to be compared with the general healthy population to draw more positive conclusions.

Research Progress of Vitiligo Psychology

Vitiligo is usually characterized by acquired decolorization, well-defined spots/spots, milky white or chalk white. Over time, the number of lesions increases and expands in a centrifugal manner. The prone sites include the face, followed by the neck, lower limbs, trunk, and upper limbs. The clinical process is usually unpredictable. Vitiligo is closely related to the psychological state of patients, who often have obvious psychological obstacles. Psychological factors are one of the causes of many patients with vitiligo. The changes in the psychological state caused by the disease can make leukoplakia develop and aggravate. In the susceptible population, the mental state plays an important role in inducing the occurrence of vitiligo, and mental stress can induce the occurrence of diseases. Although vitiligo does not cause pain and patients' activities are not limited, it greatly affects the quality of life of patients. Many patients feel distressed and anxious and their self-image is greatly reduced, resulting in a decline in self-confidence and a sense of social loneliness. In particular, patients with facial vitiligo are more prone to anger and disillusionment, and minor patients will also have a bad mood of irritability and depression.

F. Sampogna and other social surveys used 12 general questionnaires, which showed that 39% of patients with vitiligo generally had depression and anxiety, and 20 Toronto affective psychosis questionnaires showed that 24% of vitiligo was related to gender, age, clinical symptoms, and genetic factors. GHQ case survey shows that 39% of patients with vitiligo have depression or anxiety (47% for women and 21% for men). SKINDEX-29 questionnaire shows that 60% of patients with vitiligo are worried about the deterioration of the disease, 37% of patients show anger, 34% of patients show anxiety, 31% of patients have depression tendency, 28% of patients have social communication disorder and 28% of patients feel ashamed. The study also found that sick women are more likely to show mental symptoms such as depression and anxiety than men. 70% of patients with vitiligo lesions located in the exposed parts of the face or limbs felt embarrassed and frustrated, and more than 50% had anxiety, decreased self-confidence, difficulties in interpersonal communication, especially with strangers and the opposite sex, and decreased quality of life. According to the survey, 15% of patients' sexual life is affected to some extent, 59% of patients feel uncomfortable, more than 50% of patients feel "stared", 75% of patients encounter strangers and ask them about skin problems, 75% of patients think skin lesions are unacceptable, and 40% of patients are prone to irritability, depression and even suicidal thoughts. About 40% of

patients take a negative approach to the disease, with little or no treatment [7]. The family vitiligo impact scale seems to be an easy, reliable, and effective tool to measure the psychosocial impact of vitiligo on family members of patients. It may be a useful outcome measure in clinical and research settings.

Liu enrang et al. [8] evaluated and analyzed 50 patients with vitiligo and found that the incidence of anxiety in the vitiligo group was 76% and that in the control group was 3.3%. The incidence of anxiety symptoms in group A was significantly higher than that in group B ($P < 0.05$). Song Jun et al. [9] analyzed the mental factors of 773 patients with vitiligo. The results showed that there were significant differences between patients with vitiligo and the Chinese norm in the scores of somatization, interpersonal relationship, depression, anxiety, and paranoia.

Modern medical models believe that vitiligo is a psychosomatic disease, and its onset, development, and prognosis are related to psychosocial factors [10]. Facial vitiligo affects the facial beauty of patients and is prone to negative emotions such as anxiety and depression, resulting in social avoidance, which causes serious damage to the image and psychology of patients, so some patients have social avoidance, which is not conducive to disease rehabilitation, reduces the quality of life and seriously affects the quality of daily life of patients [11]. Social avoidance refers to the tendency of individuals to avoid social interaction and distress during social interaction. The higher the level of individual social avoidance, the more afraid of social interaction, and the greater the threat to their physical and mental health.

Rock shows that there are signs of metabolic-related diseases (i.e. "stress") before the development of vitiligo. No correlation was found between perceived stress and the stage or degree of disease, suggesting that increased stress may not be the result of pigment loss alone. These data further support that stress is a contributing factor to the development of vitiligo.

Psychotherapy Intervention for Vitiligo

The modern medical model has been transformed into a biological, psychological, and social model. The treatment of vitiligo is no longer a single drug, physiotherapy or surgery, but psychosocial adaptation is mainly affected by subjective factors. This implies that targeted support intervention is needed in the treatment of vitiligo, and psychotherapy is also an important part of it. Psychotherapy intervention includes cognitive-behavioral therapy (CBT), psychoanalysis, group therapy, hypnosis, psychological counseling, etc. Vitiligo patients generally have mental and psychological problems, which seriously affect the physical and mental health of patients and can induce or aggravate the condition, resulting in the decline of patients' quality of life. Psychotherapy plays a positive and effective role in the rehabilitation of patients.

Blenzer [12] believes that the depressed psychology in the etiology of vitiligo is a factor, and psychological intervention is helpful for its treatment. Unda [13] also believes that psychological counseling and intervention may be helpful to the self-confidence and quality of life of patients with vitiligo. Papadopoulos et al. [14] conducted psychotherapy for vitiligo patients for 8 weeks and re-evaluated after 8 weeks and 5 months. Compared with patients without psychotherapy, the scores of self-esteem, body image, and quality of life of patients after treatment were significantly improved. Among them, the skin lesions of 3 patients were reduced by more than 25%, none of them had skin rash expansion, and the skin rash of 3 patients in the control group was expanded by more than 50%. It suggests that psychological counseling and treatment play a certain role in the control of vitiligo. According to Yang Xian [15] et al. after psychological intervention in patients with vitiligo (mainly using Morita therapy, combined with short-term group treatment, hypnosis, psychoanalysis, and psychological counseling) the levels of serotonin 5-HT and norepinephrine NE in blood were significantly higher than those before treatment ($P < 0.05$), indicating that psychological intervention can reduce the symptoms of depression and anxiety and has a positive effect on patients. Rzepeki et al. [16] conducted a retrospective study on patients with vitiligo who received the psychological intervention and confirmed the benefits of psychological intervention as an adjuvant treatment for vitiligo. While treating the skin lesions of patients with vitiligo, specialists should also conduct psychological counseling to relieve tension, to improve the prognosis.

Post-traumatic stress disorder (PTSD) is common among vitiligo patients and they usually develop psychological disorders. Dermatologists should carefully understand and identify this situation and provide positive intervention measures to improve the quality of life of patients. Clinically, we can improve the level of social support of patients by calling for more family support and care and advising them to actively participate in social activities, which in return should help them overcome social avoidance due to the disease. Patients with anxiety and depression are mostly filled with negative emotions, their psychology is relatively fragile, and they are more sensitive to external stress, resulting in an inferiority complex, which makes the patients have higher social avoidance. In this regard, it is suggested that clinical patients can be guided to reduce their negative emotions through exercise, recreational activities such as listening to music or traveling, alleviating their social avoidance to a certain extent.

Patients with vitiligo often have more coexisting mental disorders than healthy people. The quality of life, emotional regulation disorder, attention deficit, and psychosocial comorbidity of children and adolescents with vitiligo should use multidisciplinary treatment strategies and education to reduce the burden of vitiligo-related diseases.

Conclusion

The above review shows that the etiology and pathogenesis of vitiligo are not clear, but the abnormal regulation of neuroendocrine immune system has become a consensus, suggesting that there is an interactive relationship between psychological factors and the condition of vitiligo, which is easy to cause serious effects on patients' life, work, study, sleep, social interaction and emotion. In today's society, on the one hand, work pressure and bad living habits often reduce the body's natural immunity, so as to damage the patient's autoimmune and endocrine system. Due to the increasingly extensive social communication activities, the requirements of vitiligo patients for their own appearance are also increasing and attracting more and more attention. The changes of appearance caused by the disease have a great impact on the patient's psychology; On the other hand, patients with vitiligo are in the active stage, and the proportion of patients who consciously have psychological problems such as mental tension, anxiety and depression is higher than those in the stable stage. Patients are often anxious to treat. During the treatment process, they are very easy to show anxiety and tension. Patients pay great attention to the treatment effect, and skin lesions are more likely to be nervous and have problems such as tension and depression when they are in the active stage, This will greatly reduce the quality of life of patients and their families. In the process of clinical diagnosis and treatment of vitiligo, attention should be paid to the evaluation of patients from many aspects such as biology, psychology and social medicine. At the same time of drug treatment, appropriate psychological treatment should also be given to patients, and psychological intervention should be carried out as soon as possible (including cognitive behavioral therapy, hypnosis, group therapy, hypnosis, psychoanalytic therapy, etc.), Psychological intervention can slow down the development of vitiligo (such as reversing the depigmentation process), reduce anxiety, depression and other emotional symptoms, improve the overall psychological function, enhance confidence and compliance, improve the cure rate of vitiligo, and improve the psychological state of patients with vitiligo and their families.

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