Analysis of the causes associated with depression

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Abstract. Depression is a common and complex depressive disorder that is characterised by significant and persistent depression, usually with a prolonged onset (longer than two weeks) and a tendency for recurrent episodes. In today's rapidly developing society, the incidence of depression continues to rise, making research and treatment of depression even more urgent. This paper therefore analyses and summarises the causes of depression based on existing clinical trials and research in three areas: 5-hydroxytryptamine, viral factors and parasitic factors.

Keywords: depression; 5-hydroxytryptamine; hepatitis C virus; parasites

1. Overview of depression

1.1 Introduction to depression

Depression, also known as depressive disorder, is a somatic illness and a psychological abnormality that is part of an individual's internal perception. When depression strikes, there is a sudden outpouring of negative emotions from personal feelings such as sadness, remorse, depression, loss, depression, etc., and brings about certain physical signs. In affective mental disorders, the individual experiences significant and persistent emotional changes prompted by various causes, with generalised depression being the most characteristic, and in severe cases, even denial of self-worth and self-inflicted suicidal behaviour. It is therefore essential that someone else is around to look after the person with major depressive disorder when he or she has an episode, and to stop the person from threatening his or her own life in time to notice if the person is having a manic episode. Depression is divided into three main categories: major depressive disorder, dysphoric disorder and seasonal mood disorder. [1]. Generally, depressed patients do not mix with mania, but only when the patient's mood is frustrated combined with mania and subsequently another mental illness (bipolar affective disorder), which is manic-depressive disorder. Cases with depression account for 30% to 40% of the number of cases in general hospitals. Hospital counsellors have the highest number of depressive symptoms, while only 25% of depression cases are found in primary care units [2].

Psychosocial factors such as personality traits, family environment, stressful life events, social support, and coping styles of different individuals can play a key role in the onset, development and treatment of depression. Studies on the correlation between personality and depression have found that there is a certain personality basis for the occurrence and development of depression, and the odds of depression vary greatly among people with different personality traits, with neuroticism and psychoticism being positively correlated with the occurrence and development of depression, and extraversion being negatively correlated with the occurrence and development of depression [3]. Although personality may be closely related to the onset and development of depression, depression is ultimately the result of a combination of individual characteristics and environmental factors.

Intimacy, ambivalence, emotional communication, independence, acculturation, success, recreation, organisation and control among family members have a significant impact on an individual's mood, behaviour and interpersonal relationships. Studies have found that people with neurosis have lower intimacy, more ambivalence and less emotional expression among family members. It has also been found that there is a relationship between the onset of depression and social support, as evidenced by more interpersonal relationships but less social support. In addition, stressful life events may be an important trigger for depression, particularly negative stressful life events such as loss of a spouse, death of a loved one, divorce, unemployment, marital discord, etc. Also, chronic psychosocial stimuli such as chronic poverty, chronic physical illness, interpersonal disputes, and family conflicts may also be important triggers for depression. It has been found that there is a specific relationship between negative stressful life events and the occurrence of depression in terms of quantity and response, i.e. when negative stressful life events accumulate to a certain number, it will lead to depression [4]. However, not all individuals who experience stressful life events will develop depression, and research has found that some people with depression do not experience significant stressful life events prior to the onset of depression. It is believed that stressful life events only act as a 'trigger' in the onset and progression of depression, and that it is the individual's negative or immature coping style that is an important influence on the onset of depression in individuals who experience stressful life events [5] The individual's negative or immature coping style is an important influence on the development of depression in individuals experiencing stressful life events.

In summary, depression is a relatively common clinical psychiatric disorder with a complex pathogenesis that is believed by most to be due to a combination of biopsychosocial and psychological factors and mechanisms. [6].

1.2 Consequences of developing depression

Firstly, depressive disorders can significantly affect an individual's psychosomatic health. Because they are affected by depression, patients always feel unhappy, their former interests no longer have any appeal, and they are not even interested in anything. And some believe that life is no longer worth living and that their existence is only a problem for others and a burden for their families. Patients may also experience lethargy, fatigue, reluctance to see people, difficulty thinking about problems, slow movements, reduced concentration and memory, insomnia, loss of libido, loss of appetite, weight loss, pessimism and anxiety, beginning with distant interpersonal relationships, little recreational activity, poor overall life satisfaction, and with continued development, loss of self-confidence, social withdrawal, difficulties with interpersonal interactions, and the patient's self-reported poor quality of life. Psychomotor block in severe cases: typical manifestations are slowness of movement, loss of energy, lack of interest and vitality, a general feeling of having more than enough energy, laziness in housework and daily activities, lethargy and physical and mental exhaustion all day, and in severe cases, depressive malaise.

Impairment of social functioning: Depression is usually characterised by difficulties in thinking, sleep disorders, loss of appetite, and a significant decrease in the efficiency of mental work, making it difficult to perform daily tasks, let alone creative work. It also decreases the body's immune function, delays recovery from chronic illnesses, causes a slowdown in physiological activity, decreases social work and physical ability, and diminishes sexual function.

The social burden on the family is increased: the quality of life of the family is affected, and control of the reignition of depression is much slower due to recurrence, repeated visits to the doctor, self-harm and suicide. The withdrawal reactions that occur with the sudden discontinuation of antidepressants are somatic discomfort and may also lead to extensive laboratory tests to clarify the cause, resulting in higher medical costs, wasted medical resources, impaired professional capacity and somatic activities and social maladjustment. Increased negative family events.

Increased risk of suicide: 1 in 7 patients suffering from recurrent depression resort to suicidal behaviour and 70% of suicides have depression. Suicide in depressed patients is therefore a social problem that needs to be focused on, with the peak of suicide 1 to 2 years after discharge from hospital.

A depressed state of mind can lead to negative thinking, feeling that everything is difficult, pessimism and despair about the future, seeing oneself as worthless, feeling sorry for others, family members and society, and that the only way to be relieved is to die, with an increased risk of suicide or even killing a loved one and a high success rate[7] The risk of suicide or even killing a loved one increases and the success rate is high.

2. Analysis of the associated etiology of depression

With the increased incidence of depression and experimental studies on its etiological mechanisms, it has been found that the development of depression may be related to the regulation of the 5-hydroxytryptamine transporter protein (5HTTLPR; 5-HT) gene, viral infection and parasitic infection, all three of which will be analysed in a comprehensive narrative later on.

2.1 5-HT modulation

In recent years, with the rise in the prevalence of depression and intensive research on the 5-hydroxytryptamine transporter protein (5HTTLPR; 5-HT) gene, there has been further speculation on the link between the etiology of depression and 5-HT based on clinical trials and the 5-HT hypothesis.

Depression is a complex disorder and its onset is the result of a synergistic effect of multiple factors. Depression is strongly associated with genetic variants and environmental factors. Target screening has shown that the 5-hydroxytryptamine transporter protein (5HTTLPR) gene has an overlap with depression targets. It has been shown that the S allele of 5HTTLPR is associated with smaller caudate nucleus volumes, that increased white matter volumes in the prefrontal cortex of elderly patients with depression are associated with the S allele, and that elderly patients carrying the L allele of this gene, who first developed in old age The right hippocampal volume was significantly smaller than the right hippocampal volume in patients with a recurrence in this period [8] [9] The right hippocampal volume was significantly smaller than the right hippocampal volume in patients with recurrence in this period.

Environmental factors are also correlated with the development of depression, and many studies have shown that stress is one of the environmental factors that contribute to the development of depression, and that its interaction is manifested by genetic factors that influence an individual's sensitivity to environmental exposure, which is also correlated with the 5-HTTLPR gene, whose S allele has a higher prevalence of depression in all individuals than the corresponding probability for the L allele, and therefore it is hypothesized that polymorphisms in this gene may influence the role of stress on depression [9] .

The HT hypothesis regarding 5-HT is that its role as an inhibitory neurotransmitter can lead to a pleasurable mood in the body, and if its activity is deficient it can lead to associated depression, thus the onset of depression is closely linked to the regulation of 5-HT [10] .

2.2 Viral factors

A study on the role of interferon in the treatment of depression during the antiviral process found that hepatitis C virus infection may trigger the onset of depression.

Clinical studies have shown that depression occurs in approximately 17-82% of patients during interferon treatment for hepatitis C virus (HCV), presumably for two reasons: depression may be a side effect of the antiviral process of interferon; or depression and HCV infection are in a state of co-occurrence. According to available clinical studies: 52.4% of serum samples provided by 309 subjects who completed the core component of the Epidemiology of Depression (CES~D) programme were positive for anti-HCV antibodies, 57.2% of HCV-positive subjects had significant symptoms of depression, compared to 48.2% of negative subjects, for an overall prevalence of 52.6%, indicating that the HCV-positive group had a The overall prevalence was 52.6%, indicating that the HCV-positive group scored low on the degree of emotional arousal and high on the degree of motor depression, thus suggesting that it is possible for HCV infection to coexist with symptoms of depression [11] [12].

2.3 Parasites

Based on studies of the effect of parasites and flora on organism behaviour and clinical trials comparing the prevalence of Toxoplasma gondii with the prevalence of depression, it is hypothesized that parasite interference with the human intestinal flora network is correlated with the development of depression.

It has been shown that parasite disruption of the human gut flora network is correlated with the development of depression. It is well documented that parasites can modulate changes in behavioural patterns mediated by a variety of physiological mechanisms, including host hormones and neural components. [13] However, these physiological levels may also be influenced by the presence of the parasite. However, these physiological levels may also be modulated by other microorganisms, in the sense that changes in the host can be seen as the result of a complex network of macro- and microbial communication within the same host environment, and that the presence of bacterial communities can also influence the establishment of parasites, which can also alter the composition of bacterial communities. Studies have also shown that the human gut microflora is involved in the protection against pathogens and that a two-way communication with the central nervous system is established. As a result of this communication, the composition of the gut flora may be influenced by mood and changes in the gut flora may also affect some cognitive functions [13] .and it has been shown that IL-4 levels are elevated in female suicide victims and IL-13 levels are elevated in male suicide victims in Brodmann's area, a brain region previously associated with suicidal ideation [15, 16]. Compared to age-matched controls, patients diagnosed with major depression had elevated levels of transmembrane TNFα (tmTNFα) in BA46 (a region associated with mood), and patients with major depression exhibited a large number of anti-inflammatory and pro-inflammatory markers (including IFNγ in IL1α, 2, 3, 5, 8, 9, 10, 12A, 13, 15, 18 and BA10), a a region associated with reward processing [7]. These inflammatory markers may represent activation of the immune system in response to a pathogen, which may be a parasite, a bacterium or a virus, and may play a causal role in the etiology of depression. For example, Toxoplasma gondii can elevate dopamine levels in infected animals by infecting them and relying on catecholaminergic neurons to provide the dopa decarboxylase needed to convert L-dopa to dopamine. A study of 20 European countries reported a positive correlation between Toxoplasma prevalence and national suicide rates. Among patients diagnosed with major depressive disorder or bipolar disorder, those with a history of suicide attempts had higher Toxoplasma gondii antibody titres. [14] .

3. Summary and outlook

3.1 Key findings

In recent years, psychologists have conducted multi-dimensional and multi-faceted research on the etiology and causes of depression, and have achieved effective results in the pharmacological and psychological treatment of depression. However, due to the multiple influencing factors of depression and the difficulty in establishing uniform criteria and treatment methods, there are still large blind spots in the pathogenesis of depression. The incidence of depression is gradually on the rise and is mainly treated by Western medicine. As the exact pathogenesis of depression is still not completely clear, it is difficult to carry out Western medical treatment, and the current treatment is only effective to a certain extent, but cannot fundamentally solve the problem of depression.

With the introduction of the neurotransmitter hypothesis and the receptor hypothesis, there has been considerable progress in the study of depression involving dysfunction of the 5-hydroxytryptamine (5-HT), gamma-aminobutyric acid (GABA), norepinephrine (NE), dopamine (DA) and other systems and changes in cytokine levels. The expression of 5-HT is lower in depressed patients than in normal subjects, and the decreasing level of 5-HT indicates more severe clinical symptoms. Therefore, the expression and significance of 5-HT in depressed patients has a good

clinical reference value, and its value can be further studied to better provide supporting evidence for clinical treatment. [15]

Although the results of both basic and clinical studies support the possible mechanism of depression associated with interferon antiviral therapy in patients with viral infections, the following problems remain in the research process: 1) There is a lack of uniformity in the definition and assessment of depression in cases across studies. In addition, most studies did not assess depression appropriately at baseline and followed up with a validated structured diagnostic interview, and therefore their reported prevalence rates varied to a large extent. (ii) Most studies had small sample sizes and did not conduct multicentre randomised double-blind prospective studies. (iii) Due to the complex mechanisms of depression, the data from the current studies lack replicability. (iv) Most studies have explored the underlying mechanisms of interferon-related depression without properly excluding those with pre-existing psychological disorders.

Turhan Kanley, Associate Professor of Psychology and Radiology at the State University of New York at Stony Brook, USA, has proposed a hypothesis that major depression may be a disease caused by parasitic, bacterial or viral infections in the human body. 2016 The conjecture of this paper, at this stage, does not prove that there is any causal relationship between viruses, bacteria, parasites and depression, but only a correlation, and depression remains a mental disorder within the category of mental illness.

3.2 Summary

As mentioned above, depression is a genetically influenced illness with a biological basis, but it is also influenced by a combination of social, psychological and cultural factors, resulting in a unified biopsychosocial model that is the result of a combination of factors. Depression has a wide range of classifications and complex symptoms, and the combination of internal and external factors makes it difficult for psychologists to diagnose and treat. Therefore, both Chinese and Western medicine require in-depth research in the etiology and treatment of depression. There is a consensus that unilateral medication alone is not effective in alleviating all types of depression, and that internal medication needs to be complemented by family and social care to regulate the patient's mood from the outside in.

Research on the etiology of depression is still ongoing among psychologists, and various uncertain or contrary results will certainly be further identified and unified in the course of ever-changing research and experiments. With the continuous improvement of science and technology and the improvement of psychological testing conditions, we will definitely clarify the biological etiology of depression and provide a reliable and feasible basis for clinical treatment in order to promote the further development of psychiatry.[16]

3.3 Outlook

Depression is the second most important global disease causing a serious human burden and there is an increasing focus on early intervention and prevention of mental illness. Depression is associated with a variety of factors and is a complex affective mental disorder. In the treatment of depression, psychological counselling should be actively used as the mainstay, supplemented by medication, to ensure the effectiveness of treatment and to avoid recurrent episodes of depression by counselling patients on their pathological mechanisms and understanding their experiences. In terms of drug research, various new drugs with positive efficacy and low adverse effects will be marketed one after another and widely used in clinical practice. Eventually, according to the specific situation of each individual, combined Chinese and Western medicine treatment, supplemented by psychological intervention, will form a personalized treatment plan that can enhance the therapeutic effect, which will definitely become the treatment trend in the future.

In recent years, more and more research methods on neural networks have emerged, but few studies have combined information changes in neural networks or pathways with actual biological significance, so future work on depression research should be based on an interdisciplinary and cross-

disciplinary approach to better integrate experimental methods with practical applications and structural changes with function, from the microscopic to the macroscopic, from the molecular level, the cellular level, tissue and organ level, to the systemic level[17] . The aim is to explore the pathogenesis of depression in a more scientific way and from a more comprehensive perspective, so as to alleviate the suffering of more depressed patients and provide new ideas for the diagnosis and treatment of depression.

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