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A review of research advances in the clinical management of adolescent depression

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Abstract. With the change of time and the development of society, in recent years, the problem of depression among adolescents has attracted much attention in China and even in the world. Depression is a relatively common psychiatric disorder at this stage. Focusing on the clinical treatment methods of adolescent depression, this review summarizes and discusses the progress of psychotherapy, the progress of medication, and other physical therapy methods applied in today's clinic for treating adolescent patients with depression and finds that the psychotherapeutic method that is applied more in today's clinic is cognitive-behavioral therapy (CBT); medications such as fluoxetine are mostly used, but it is difficult to guarantee the safety of medication use, and the combination of Chinese and Western medications is often used in China. In China, a combination of Chinese and Western medicines is often used; at the same time, repetitive transcranial magnetic therapy is often used, and electroconvulsive therapy is occasionally used. At the same time, the combination of multiple therapies has a better effect.

Keywords: adolescents, depression, clinical treatment method, research progress

1. Introduction

Depression, also known as depressive disorder, is one of the most common mental disorders. It is characterized by a significant and persistent depressed mood, and common clinical symptoms include depressed mood, impaired volition, somatic disturbances, the inappropriateness of mood, pessimism, and in severe cases, suicidal ideation, and action [1]. The World Health Organisation (WHO) has found that the number of people with depression has reached 322 million worldwide, with about 4.3% of the population suffering from depression globally, and the prevalence of depression in China is comparable, at about 4.2%. In China, the prevalence of depression is comparable, at 4.2%. Among them, adolescents account for a large proportion. Adolescent depression is a group of chronic mental illness syndromes with symptoms that can persist into adulthood [2]. 2022 Data from a survey by the Blue Book of China's National Mental Health show that 30.28% of the total number of people in China under the age of 18 suffer from depression, 50% of depressed patients are school students, and 41% of patients have taken a break from school due to depression, making adolescent depression a major public health problem in China. Depression among adolescents has become a major public health problem in China.

Depression is easy to recur and difficult to cure, so the goal of treatment is to reduce the suicide rate, eliminate clinical symptoms, and improve the quality of life. For adolescent patients with depression who are in an important growth period, how to treat them clinically needs to be cautious. This paper

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analyses and summarizes the psychotherapy, medication, and other physical therapy methods used in the treatment of adolescent depression, hoping to ensure the healthy growth of adolescents in this special period of adolescence, improve the quality of treatment for adolescent depression, and reduce the impact of social factors, family factors and other external environments on adolescent patients with depression.

2. Psychological therapies

2.1. Cognitive Behavioural Therapy (CBT)

Cognitive Behavioural Therapy (CBT), a form of psychotherapy developed in the early 1960s with Alan Beck, is a structured, short course, present-focused set of psychotherapeutic approaches used primarily to address presenting problems and correct dysfunctional (incorrect and/or unhelpful) thoughts and behaviors. In practice, therapists often look for ways to elicit cognitive changes (correction of the patient's thoughts and belief systems) that lead to lasting changes in mood and behavior [3].

Cognitive models of depression have been studied extensively in adults, with studies suggesting that cognitive behavioral therapy (CBT) is an effective treatment for adult depression (e.g., Beck, Hollon, Young, Bedrosian, & Budenz, 1985). Subsequently, it has also been shown that cognitive behavioral therapy is an effective treatment for depression in adolescents and holds promise as a treatment for depression in younger children (for reviews, see Harrington, Whittaker, & Shoebridge, 1998; Kaslow & Thompson, 1998). The cognitive model suggests that depression arises as a result of altered cognition (the emergence of maladaptive thoughts and behaviors). Therefore, groups in the adolescent stage of life can be well treated with the features of CBT therapy when depressive symptoms arise, mainly because adolescents' cognitive behavior is not yet stereotyped, and correcting maladaptive cognition and providing skills that can be used when experiencing stressful events or negative emotions can produce good results.

2.2. Dialectical Behaviour Therapy

Dialectical Behaviour Therapy (DBT) was created by Professor Marsha in 1991 to help patients stabilize their emotions, build better interpersonal relationships, and restore social functioning through skills training in four modules: positive thinking, emotion regulation, pain tolerance, and interpersonal efficacy, and was initially applied to individuals with non-suicidal self-injury and suicide [4][5].

The efficacy of the skills training module of DBT as a stand-alone treatment program has been confirmed by several studies, such as the alleviation of emotional eating and bulimia in adolescents[6]. It is clear from the results of previous studies that DBT therapy can be used based on medication-producing results and stabilization of the condition. Adolescents with depression are in a situation where their moods are volatile, interpersonal communication is difficult, and their lives may change due to their academic lives; in the face of this situation, DBT can be a good way to soothe their moods, build stronger interpersonal relationships, and confirm their social roles. The effect of DBT on social functioning interventions for adolescents with depression is likely to be better, and it is hypothesized that it may be because adolescents with depression are at their physical are at a more peak state and have better emotional resilience.

2.3. Family therapy

Family therapy refers to the psychotherapeutic work carried out in response to the psychological problems of the family. Family therapy from a holistic and systemic perspective, is committed to the analysis, adjustment, and change of family relationships or pathological emotional structure among members, improving family functioning, and ultimately achieving the purpose of rehabilitation, therapeutic impact, and providing more effective methods and means for solving the disturbances encountered by people in their real lives [7, 8].

Family therapy mainly treats adolescent depression in two parts: one is to treat it from the patient's point of view. Family therapy can help patients determine their causes and pathogenesis. At the same time, we can understand the problems existing in this family system, to help the family solve or alleviate

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these problems as a whole. Second, family therapy is considered from the perspective of patients' families. In the face of adolescents with depression in their families, the psychological problems caused by mental stress and the economic stress of their families also need to be paid attention to. Family therapy can provide psychological counseling for family members, make them treat patients and their illnesses correctly, and help patients fight depression together.

With the continuous development of psychotherapy and the progress of family therapy in recent years, many scholars have confirmed through research and practice that family therapy has good effects in the application of adolescent depression. Through the integration of family therapy and the influence of various aspects of the family system, it can effectively reduce the recurrence rate and promote the recovery of the patient's psychological and social functioning, which has a better effect on the alleviation of the symptoms of adolescent depression patients. Appropriate use of family therapy is conducive to enhancing mutual understanding and support among family members, alleviating the rigidity of family functioning, and facilitating the recovery of the patient's condition [9].

2.4. Hypnotherapy

Hypnosis is generally considered to be an altered state of consciousness that can be subjectively experienced in everyday life [10]. Hypnotherapy is the use of hypnosis to treat patients in a hypnotic state in which they become more suggestible, less analytical and judgemental, and more receptive to the ideas instilled by the therapist. Despite the lack of empirical studies, hypnosis has been developed as a promising intervention for depression [11]. At this stage, there are fewer explorations of hypnotherapy for the treatment of depression in adolescents, the research is very promising, and the empirical effects have yet to be explored.

3. Pharmacological treatment

3.1. SSRIs

Western drugs in antidepressants include selective 5-hydroxytryptamine reuptake inhibitors (SSRIs, e.g., fluoxetine, paroxetine, citalopram, etc.), 5-hydroxytryptamine and norepinephrine reuptake inhibitors (SNRIs, e.g., venlafaxine and duloxetine), and monoamine oxidase-like inhibitors (MAOIs, e.g., moclobemide).

SSRIs have achieved relatively significant results in the treatment of adult depression and have been increasingly used in the treatment of adolescent depression in recent years. Compared with traditional tricyclic antidepressants, SSRIs have better therapeutic effects and fewer side effects.

3.1.1. Fluoxetine. Fluoxetine is the first new generation of antidepressants used in clinical practice. Fluoxetine has a significant effect on blocking 5-HT reuptake has a better efficacy in improving depressive episodes, and is currently used as a first-line drug in clinical practice. Studies have shown (Emslie GJ, Heiligenstein JH, Wagner KD, et al., 2002) that fluoxetine is safe and effective in the treatment of acute-phase adolescent depression and does not require a very high dose of the drug to be therapeutic. Relevant clinical studies have shown (Li YL, Dong QL, Zhang L. 2022) that the drug safety of fluoxetine is guaranteed, and it can be mainly used to improve the symptoms of depression and anxiety, as well as to reduce suicidal tendencies of adolescent depression. Adverse effects of fluoxetine mainly include gastrointestinal adverse effects, headache, nausea, and insomnia.

3.1.2. Paroxetine and Promethazine. One study (Keller MB, Ryan ND, Strober M, et al., 2001) explored paroxetine and promethazine in the treatment of adolescent depression and found that both treatment efficiency and improvements in depressive mood and overall clinical impression were better in the paroxetine group than in the placebo group. In contrast, there were no significant differences in these measures between the promethazine and placebo groups. There are experimental results in multi-national experts' studies suggesting that paroxetine may increase the risk of suicide in depressed patients, which also needs to be explored in our ongoing research.

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3.1.3. Sertraline. Sertraline is also the current clinical first-line drug for the treatment of depression. Some studies have shown (Tang Fangfang, Tao Linggang, Zhou Xin. 2020) that sertraline can effectively treat adolescent depression, can improve sleep disorders reduce serum C-reactive protein, with fewer adverse effects than other drugs, and can be promoted as an ideal treatment for adolescent depression [12].

3.2. SNRIs

3.2.1. Venlafaxine. Venlafaxine is a representative of the SNRI class of drugs, which has a dual inhibitory effect on 5-HT and NE recycling, so it has a wider therapeutic range for depressive symptoms and can be used as a first-line drug in the clinic. Adverse effects of venlafaxine are rare and may include nausea, constipation, dry mouth, and insomnia, but they mostly occur in the initial phase of treatment, and these adverse symptoms will gradually decrease as treatment progresses [12].

3.2.2. Duloxetine. Duloxetine is an antidepressant that produces effects by inhibiting 5-HT and NE reuptake and is not used much in clinical practice compared to venlafaxine.

3.3. MAOIs

MAOIs were first used in the 1950s as a treatment for tuberculosis, and then accidentally discovered to have antidepressant effects. In recent years, the main representative drug of MAOIs is moclobemide. Monoamine oxidase (MAO) is a naturally occurring enzyme in the human body, which catalyzes the oxidative deamination of monoamines and regulates the concentration of monoamines in neuronal cells and synaptic gaps. MAOIs produce antidepressant effects by inhibiting the activity of monoamine oxidase, reducing the metabolic inactivation of catecholamines, and increasing the amount of catecholamines in synaptic sites [12]. Due to the side effects of moclobemide, which can be associated with liver toxicity, cardiovascular problems, hemorrhage, and even death, nowadays, moclobemide has become a clinical class II drug.

3.4. Traditional Chinese Medicine (TCM)

In traditional Chinese medicine, there is no such disease as depression, two analogies, depression is a combination of depression, anxiety, dysthymia, and other diseases. Depression is a condition in which the main manifestation is stagnation of qi, emotional restlessness, chest tightness, coercion, or pharynx as if there is a foreign body infarction due to internal injuries of emotions and physique factors [13]. Since Western medicines have side effects to varying degrees and in most cases are highly reactive, Chinese herbal medicines are often used in conjunction with the treatment of depression in current Chinese clinical practice.

Chinese medicine believes that depression and irritability are related to the liver, therefore, Chinese medicine often uses drugs to ease the liver, regulate qi, and relieve depression, such as Chai Hu, Xiang Fu, and Yu Jin. For patients who have poor sleep, they may also be treated with drugs that help them sleep and calm the mind, such as dragon bones and oysters. Clinically, it is rare to use one type of Chinese medicine alone to treat depression and compound preparations are often used, with the most commonly used being Liver-Sparing and Depressant Capsules, Depressant Pellets, Chai Hu Shuo Liver Powder, Free and Easy Dispersant, Gardenia Free and Easy Dispersant, as well as the proprietary Chinese medicine Depressant Pill [12]. In addition, Chinese medicines need to be applied as auxiliary medicines in the clinic.

4. Physiotherapy

Physiotherapy mainly includes repetitive transcranial magnetic stimulation (rTMS) therapy, electroconvulsive therapy (ECT) therapy, and acupuncture.

The use of rTMS therapy has become more common in patients with refractory adult depression, but fewer studies have been conducted on the treatment of adolescent depressive disorders. Currently, there

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have been studies confirming that rTMS are safe and effective for adolescent depressive disorder symptoms, but there is still a lack of corresponding randomized controlled trials. Abnormalities in cortical local excitability and connectivity to other functional brain sites do have a relationship with adolescent depressive disorders, and perhaps in the future, a more individualized protocol for rTMS treatment of adolescent depressive disorders could be developed [14].

ECT is usually currently available for use in depressed adolescents over the age of 12 years in patients who have failed to respond to antidepressant medication and psychological interventions or who present with severe self-injurious behaviors. During acute episodes of major depressive disorder in adolescents, ECT treatment, as well as its maintenance, is effective in relieving symptoms and may reduce relapse rates. Overall, ECT is a treatment that can be used after a somatic assessment of severely depressed adolescents.

Clinically, the use of acupuncture therapy for the treatment of depression has achieved better efficacy [15]. As acupuncture therapy has no side effects, is convenient and practical, and has better results, it has been favored by doctors and patients in present-day China and even in some Western countries and regions.

5. Conclusion

In today's clinical treatment, western medicine is the main drug to treat adolescent depression, while Chinese medicine can be used as an assistant, combined with psychotherapy such as CBT therapy, and physical therapy can also be used when the above treatment methods are ineffective. However, these clinical treatments still have their shortcomings. In many papers, it has been mentioned that the hormonal effects and influences brought by many drugs will make teenagers' bodies and minds hurt again to different degrees. On the one hand, increased appetite and weight gain will cause trouble for teenagers. On the other hand, side effects such as drowsiness will also bring troubles to the normal life of teenagers. This requires continuous improvement in clinical treatment and scientific research in the future. In addition, even in China, the origin of Chinese medicine, the exploration of Chinese medicine in treating depression is still insufficient. Neither Chinese patent medicine nor traditional Chinese medicine decoction can effectively treat depression, or even can not be used alone. At present, hospitals in China have increased the use of important drugs, but there are still single types of drugs used together with other Western medicines. In many Chinese medicine hospitals, there is not even a psychology department. Ensuring the stable use of traditional Chinese medicine and establishing a psychology department in traditional Chinese medicine hospitals are all places that we need to work hard in the future.

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