The long-held view that medicine or therapy is an "art" is quickly becoming obsolete. To procure referrals and reimbursement, clinicians are being forced to be accountable (ie, use empirically supported, effective, reproducible, and efficient treatment interventions) by insurance companies, professional credentialing bodies, and their consumers. This article focuses on reviews of treatment interventions by scholars, researchers, clinicians, and study groups who have examined multiple databases of published studies and ongoing treatment protocols. Behavioral and cognitive-behavioral therapies were most often identified as well-established treatments for specific mental and behavioral health disorders in children and adolescents. Psychotherapy alone or in conjunction with pharmacotherapy can be powerful tools in helping youth manage or eliminate negative outcomes of mental and behavioral disorders.

Principles of Pharmacology
Cynthia Feucht and Dilip R. Patel
An understanding of the basic principles of pharmacokinetics and pharmacodynamics of drugs is important in appropriate therapeutic use of various drugs. In simple terms, the effects of the body on the drug once it has entered the body has been referred to as pharmacokinetics, and it aims to provide a quantitative assessment of the main processes involved in disposition of the drug, including absorption, distribution, metabolism, and elimination. Pharmacodynamics concerns itself with the effects of the drug on the body and the main processes involved are the action of the drug on specific sites, especially the receptors. In addition, pharmacogenetics and pharmacogenomics evaluates the influence of genetics on drug response. This article reviews basic concepts of pharmacology applicable to psychotherapeutic agents used for the treatment of mental disorders of children and adolescents.

Basic Concepts of Neurotransmission
Dilip R. Patel and Cynthia Feucht
An understanding of synaptic neurotransmission is fundamental to the understanding of various neuropsychiatric symptoms and disorders. It is also essential to the discovery of pharmacologic agents that modulate neurotransmission to alleviate such symptoms and conditions. Various aspects of the process of neurotransmission and the synthesis, release, reuptake, or destruction are all potential events for action of therapeutic drugs. This article reviews the basic aspects of relevant neuroanatomy, neurotransmission, and major neurotransmitter systems.
Herbal Medicines in Pediatric Neuropsychiatry

Cynthia Feucht and Dilip R. Patel

An increasing number of studies have evaluated the role of herbal supplements in pediatric disorders, but they have numerous limitations. This review provides an overview of herbal components, regulation of supplements, and importance of product quality assurance. Use of herbal supplements is discussed with reference to factors that influence use in the pediatric population. The remainder of the article discusses the use of St John’s wort, melatonin, kava, valerian, eicosapentaenoic acid, and docosahexaenoic acid, focusing on indications, adverse effects, and drug interactions, and providing a limited efficacy review. Herbal supplements used for weight loss are also briefly discussed.

Pharmacotherapy for Anxiety Disorders in Children and Adolescents

Ian Kodish, Carol Rockhill, Sheryl Ryan, and Chris Varley

Anxiety disorders comprise the most prevalent mental health disorders among children and adults. Psychotherapy and pharmacotherapy are effective in improving clinical impairments from anxiety disorders and maintaining these improvements. This article discusses how to obtain a suitable diagnosis for anxiety disorders in youth for implementing appropriate treatments, focusing on the evidence base for pharmacologic treatment. Clinical guidelines are discussed, including Food and Drug Administration indications and off-label use of medications, and considerations for special populations and youth with comorbidities are highlighted. Findings suggest moderate effectiveness of medication, particularly selective serotonin reuptake inhibitors, in the treatment of anxiety disorders in youth.

Psychopharmacologic Control of Aggression and Violence in Children and Adolescents

Joseph L. Calles Jr

Aggression in children and adolescents is commonly displayed in the community and is even more commonly seen in clinical settings. As symptoms of an underlying disorder, aggressive behaviors should be comprehensively evaluated, and developmental, medical, and substance-use disorders should be identified and treated. This article reviews the most common psychiatric conditions associated with aggression and suggests appropriate psychopharmacologic interventions. Tables with recommended agents for each psychiatric disorder, as well as dosing ranges for each agent, are included.

Psychopharmacology of Autistic Spectrum Disorders in Children and Adolescents

Ahsan Nazeer

This article provides an overview of the psychopharmacologic management of irritability, hyperactivity, and repetitive behaviors in children and adolescents with autism spectrum disorder. A review of the current literature on medications used to treat these conditions with emphasis on randomized controlled trials is presented.
Pharmacotherapy for Child and Adolescent Attention-deficit Hyperactivity Disorder

Gabriel Kaplan and Jeffrey H. Newcorn

Research in the past 2 decades showed that attention-deficit/hyperactivity disorder (ADHD) is a frequently occurring psychiatric disorder that causes considerable suffering to patients and their families. This article outlines current pharmacologic ADHD treatment options and focuses on their safety profile and efficacy. In addition, it addresses treatment selection, guidelines for monitoring treatment, and recent controversies in the field.

Psychopharmacology of Eating Disorders in Children and Adolescents

Neville H. Golden and Evelyn Attia

Eating disorders are serious psychiatric illnesses that often present during adolescence and young adulthood. They are associated with medical as well as psychological disturbances, and pediatricians play an important role in their identification, diagnosis, and management. There has been a paucity of treatment research that specifically focuses on children and adolescents with eating disorders. This article reviews the scientific evidence for the use of psychotropic medication in the treatment of children and adolescents with eating disorders.

Pharmacotherapy for Obese Adolescents

Donald E. Greydanus, Lee A. Bricker, and Cynthia Feucht

The pharmaceutical search to induce weight loss was precipitated by the United States Food and Drug Administration’s (FDA) 1959 formal approval of phentermine for short-term weight loss despite limited research supporting its assertions of weight loss. In addition to sympathomimetic amine products like phentermine, other medications considered in this article include herbal products, sibutramine, orlistat, metformin, and rimonabant. The use of pharmacotherapy for morbidly obese adolescents should be part of a comprehensive weight-loss program that recommends diet, exercise, and behavioral modification. Side effects and the possibility of major adverse effects should be remembered when considering use of these products.

Psychopharmacology of Depression in Children and Adolescents

Susan M. Smiga and Glen R. Elliott

Although much debate continues about the prevalence of depressive disorders in prepubertal children, depression clearly is common in adolescents, increasing rapidly throughout the teen years. All physicians who work with young patients must to be able to recognize and treat these disorders. This article provides a brief overview of depressive disorders in children and adolescence, including their clinical presentation, prevalence, etiology, course, and prognosis. Psychopharmacological treatment options are reviewed in detail, including practical information for medication management including patient education, making the decision to treat with medication, selection of specific medications, strategies for nonresponsive patients, and decisions about stopping medication.
Psychopharmacology of Pediatric Bipolar Disorders in Children and Adolescents

Tiffany Thomas, Libbie Stansifer, and Robert L. Findling

Pediatric bipolar disorder (PBD) is a chronic and disabling illness often leading to serious disruption in the lives of children and adolescents with this condition. Until recently, methodologically stringent data to guide pharmacologic interventions in the youth were scarce. However, clinical trials conducted recently have expanded the existing evidence base, and new data are emerging rapidly. Recent studies have examined the use of lithium, anticonvulsants, and atypical antipsychotics for acute and long-term treatment of PBD. Despite these new advances, further placebo-controlled trials investigating the efficacy and safety of pharmacologic treatment strategies for young people with bipolar disorder are still needed.

Cognitive-Adaptive Disabilities

Joseph L. Calles Jr

Cognitive-adaptive disabilities (CADs) are not frequently seen in the general pediatric setting. Yet, given the high rates of comorbidity in that population, they commonly demand a lot of time and effort on the part of clinicians. One aspect of comorbidity is the degree to which psychiatric disorders occur in children, adolescents, and young adults with CADs. This article reviews the epidemiology, associated psychopathology, and pharmacologic treatment of selected CADs.

Psychopharmacology of Schizophrenia in Children and Adolescents

L. Lee Carlisle and Jon McClellan

The past 5 years have seen major advances in the diagnosis and treatment of schizophrenia in children and adolescents. This article, reviews the clinical and diagnostic characteristics of schizophrenia in youth with an eye toward recent findings. This article also provides a more extensive review and update of the psychopharmacology of early-onset schizophrenia.

Management of Nonpsychiatric Medical Conditions Presenting with Psychiatric Manifestations

Manmohan K. Kamboj and Ruqiya Shama Tareen

There is a significant dilemma when underlying medical disorders present as psychiatric conditions. It is important to identify the medical condition because treatment and management strategies need to be directed to the presenting symptoms and also to the underlying medical condition for successful treatment of the patient. Some systemic disorders present with psychiatric manifestations more often than others. The pattern of psychiatric disturbance seen may be specific for a particular medical disorder but may also be varied. Many drug formulations and medications also may produce psychiatric presentations. This article considers the management of nonpsychiatric medical conditions presenting with psychiatric manifestations.
Pharmacotherapy for Substance Abuse Disorders in Adolescence

Gabriel Kaplan and Iliyan Ivanov

The public health effects of adolescent substance abuse disorders (SUD) reaches further than the immediate intoxicating effects. Medications play a limited role in the treatment of youth beyond addressing short-term symptoms but may improve longer-term outcomes for some patients. Given the potential devastating consequences of SUD, clinicians should become familiar with all available treatment options. This article reviews the pharmacotherapy for adolescent SUD to inform clinicians considering the use of this modality for selected groups of patients.

Psychopharmacology of Tic Disorders in Children and Adolescents

Madeline A. Chadehumbe, Donald E. Greydanus, Cynthia Feucht, and Dilip R. Patel

Tics in children and adolescents are a common occurrence; however, a small proportion of these disorders require pharmacologic interventions. Several limitations exist with the use of pharmacologic interventions, and hence, a more ideal multidisciplinary approach is recommended, with emphasis on nonpharmacologic management for improved functioning, adaptation, and comorbidities. Mutual and realistic goals ensure a trustful and successful relationship between the clinician and patient. An individualized plan is recommended with the goal of limiting side effects and managing comorbid conditions as a priority before addressing the tics specifically. This article reviews medications used to treat tic disorders in children and adolescents.

Pharmacology of Sleep Disorders in Children and Adolescents

Bantu Chhangani, Donald E. Greydanus, Dilip R. Patel, and Cynthia Feucht

There is a high prevalence of sleep disorders in children and an apparent increasing need for pharmacologic management. However, because of the paucity of data available with regards to dosing, efficacy, tolerability, and safety profiles of medications as well as a lack of adequate well-designed clinical trials, medications are currently not approved for the pediatric population by the US Food and Drug Administration. There are no pharmacologic guidelines for the specific sleep disorders or the different pediatric age ranges. Additional research is needed for evidence-based pediatric sleep pharmacotherapy. This article reviews pediatric sleep disorders and the pharmacologic therapeutic options.

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