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Review

Attention deficit hyperactivity disorder☆

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ABSTRACT

Attention deficit hyperactivity disorder (ADHD) is one of the most common childhood psychiatric disorders and can persist into the adulthood. ADHD has important social, academic and occupational consequences. ADHD diagnosis is based on the fulfilment of several clinical criteria, which can vary depending on the diagnostic system used. The clinical presentation can show great between-patient variability and it has been related to a dysfunction in the fronto-striatal and meso-limbic circuits. Recent investigations support a model in which multiple genetic and environmental factors interact to create a neurobiological susceptibility to develop the disorder. However, no clear causal association has yet been identified. Although multimodal treatment including both pharmacological and psychosocial interventions is usually recommended, no convincing evidence exists to support this recommendation. Pharmacological treatment has fundamentally shown to improve ADHD symptoms in the short term, while efficacy data for psychosocial interventions are scarce and inconsistent. Yet, drug treatment is increasingly popular and the last 2 decades have witnessed a sharp increase in the prescription of anti-ADHD medications coinciding with the marketing of new drugs to treat ADHD.

Trastorno por déficit de atención con hiperactividad

Palabras clave:
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RESUMEN

El trastorno por déficit de atención con hiperactividad (TDAH) es una de las enfermedades psiquiátricas más frecuentes en la infancia y puede persistir durante la edad adulta. El TDAH presenta importantes consecuencias en el funcionamiento social, académico y ocupacional. El diagnóstico es clínico y se basa en el cumplimiento de unos criterios que pueden variar en función de la clasificación diagnóstica que se utilice. Las manifestaciones clínicas del trastorno presentan una gran variabilidad entre pacientes y se han relacionado principalmente con alteraciones en los circuitos frontoestriatales y mesolímbicos. La interacción de múltiples factores genéticos y ambientales parece que podría generar una vulnerabilidad a desarrollar el trastorno, aunque no se ha establecido todavía una asociación causal clara con ninguno de ellos. Aunque el tratamiento habitualmente recomendado incluye la combinación de tratamiento farmacológico y psicosocial, las pruebas de eficacia del primero se limitan mayoritariamente a una mejora sintomática a corto plazo, mientras que las del segundo son poco claras. Aun así, el tratamiento farmacológico ha aumentado exponencialmente durante las 2 últimas décadas, coincidiendo con la comercialización de nuevos medicamentos.

Introduction

Attention Deficit Hyperactivity Disorder (ADHD) constitutes a syndrome characterised by attention deficit, hyperactivity and impulsivity. It is one of the most common psychiatric disorders in childhood[1] and can have a substantial impact on the psychosocial development and functioning of patients who present it.[2] In recent decades, much interest has focussed on trying to understand the neurobiological correlations that may explain the appearance and

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manifestations of the disorder, and to help find adequate therapeutic strategies to treat these patients.[3,4] For several years, both diagnosis and treatment of ADHD have been controversial and many specialists affirm that it is an invented or exaggerated disorder the popularity of which responds to economic interests.[5] The present article aims to review recent findings that help understand the disorder and its therapeutic approach.

Definition

ADHD is characterised by a persistent pattern of inattention and/or hyperactivity/impulsivity, which is incompatible with the developmental level of the individual. The disorder begins in childhood and interferes with the social, academic and occupational functioning of the patient. The definition of the disorder, according to the *Diagnostic Statistical Manual of Mental Disorders* (DSM), has been constantly changing and, in general, the diagnostic criteria have tended to be increasingly less restrictive. Hence, the cut-off point of the age of onset has been progressively raised, the number of symptoms required to establish a diagnosis has been reduced, and a diagnosis can be made in the presence of comorbidities.[5] The International Classification of Diseases (ICD) also recognises ADHD, although it establishes more restrictive diagnostic criteria than the DSM-V (Table 1). It should be noted that the DSM criteria are more popular than those of the ICD, and that they are used in most scientific research studies.

Epidemiology

It is considered that around 5% of the world population of children present ADHD and 15%–50% of them will maintain the same diagnosis during adulthood.[1] The prevalence of ADHD varies greatly in the literature. Several factors have been proposed to explain this variability. For instance, socio-demographic factors such as gender and age. In general, ADHD prevalence is higher in those studies that include a greater proportion of boys, as ADHD is more frequent in them.[1] It has also been observed that prevalence is negatively related to age.[1] This is not strange if we consider that symptomatology diminishes with time.[6] Geographical location has also been associated with different degrees of prevalence of the disorder and significant variations in prevalence exist between different regions of the world and within a single country.[1] These results show the importance of sociocultural factors in the diagnosis. Finally, we should also mention that prevalence of the disorder varies according to the diagnostic criteria implemented: prevalence is higher when the DSM criteria are applied than when ICD criteria are used; similarly, it is higher with recent versions of the DSM criteria than with earlier editions.[1] The fact that the diagnostic criteria have become less restrictive probably explains the considerable increase in ADHD prevalence during recent decades, and everything seems to indicate it will continue to grow with the use of DSM-V.[5]

Clinical manifestations, comorbidities and consequences

The three classic characteristics of ADHD are attention deficit, hyperactivity and impulsivity. Based on the principal symptoms, the disorder is classified as inattentive, hyperactive/impulsive or combined. Symptoms of attention deficit in children are normally expressed as distraction and difficulty to sustain attention, especially during boring and repetitive tasks. Impulsivity may be expressed as the tendency to act without thinking about the long term consequences or in the form of social interference (interrupting conversations or games), whereas hyperactivity is seen in restlessness, excess motor activity, fidgeting with hands and feet or talking excessively.

ADHD presents broad clinical heterogeneity and differences in clinical presentation can vary with gender. Girls are more likely to have attention deficit problems and less hyperactivity and behavioural difficulties than boys.[7] Age is another factor in clinical heterogeneity. With the years, symptoms of hyperactivity and impulsivity progressively diminish, while those of inattention tend to persist. Hence, in adult patients the cardinal symptoms refer to difficulties in the organisation of activities or tasks, and

Table 1
Comparison of the characteristics of the Diagnostic and Statistical Manual of Mental Disorders V and the International Classification of Diseases version 10 for the diagnosis of attention deficit hyperactivity disorder.

Characteristics	DSM-V	ICD-10
Name	Attention deficit hyperactivity disorder	Hyperkinetic disorders
Minimum number of symptoms	In patients under 17 years of age: 6 symptoms of inattention and/or 6 of hyperactivity/impulsivity. In patients over age 17 years: 5 symptoms of inattention and/or 5 of hyperactivity/impulsivity	Six symptoms of inattention, 3 symptoms of hyperactivity and one symptom of impulsivity
Minimum duration of the symptoms	Six months	Six months
Is the presence of symptoms in different settings required?	Some symptoms present in 2 or more settings	Symptoms of inattention and hyperactivity are present in more than one setting
Is it required that the symptoms have consequences?	Evidence that the symptoms interfere with or reduce the quality of social, educational and work functioning	The symptoms cause clinically significant discomfort or a deterioration of social, educational and work functionality
Age of onset	Several symptoms were present prior to the age of 12 years	The disorder starts before the age of 7 years
Comorbidities that exclude ADHD diagnosis	Other mental disorders, as long as they explain the symptoms of hyperactivity and inattention better than ADHD	Pervasive developmental disorder, such as autism spectrum disorders, anxiety disorder, affective disorder, schizophrenia or other psychotic disorders
Specifiers/subtypes	Combined presentation, predominantly inattentive subtype and predominantly hyperactive/impulsive subtype; severity: mild, moderate and severe; in partial remission; other specified attention deficit and hyperactivity disorders; non-specified attention deficit and hyperactivity disorder	Activity and attention disorder; hyperkinetic dissocial disorder; other hyperkinetic disorders; non-specified hyperkinetic disorder
Is the diagnosis in adults considered?	Yes, it provides specific examples of symptoms in adults	Yes, but it does not provide specific examples of symptoms
Diagnostic category	Neurodevelopmental disorders	Behavioural and affective disorders generally with onset in childhood or adolescence

ADHD: attention deficit hyperactivity disorder; DSM-V: Diagnostic and Statistical Manual of Mental Disorders V; ICD-10: International Classification of Diseases version 10.