Attention Deficit Hyperactivity Disorder, CNS Stimulants and Sport

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Contents

Abstract .................................................................................................................................................. 11
1. Attention Deficit Hyperactivity Disorder (ADHD) .............................................................................. 12
  1.1 Prevalence of ADHD .................................................................................................................. 12
  1.2 Clinical Features of ADHD ......................................................................................................... 13
  1.3 Motor Performance ..................................................................................................................... 13
  1.4 Causes of ADHD ....................................................................................................................... 14
  1.5 Diagnosis of ADHD .................................................................................................................. 14
  1.6 Management of ADHD ............................................................................................................. 15
2. CNS Stimulant Medications ................................................................................................................ 15
  2.1 Mode of Action ............................................................................................................................ 16
  2.2 Drug Prescription ........................................................................................................................ 16
  2.3 Adverse Effects .......................................................................................................................... 17
  2.4 Pharmacokinetics ....................................................................................................................... 17
  2.5 Use in Sport .................................................................................................................................. 17
3. Other Medications Used in ADHD ..................................................................................................... 19
  3.1 Tricyclic Antidepressants ............................................................................................................. 19
  3.2 Clonidine ..................................................................................................................................... 19
  3.3 Other Antidepressants ................................................................................................................ 19
  3.4 Major Tranquillisers ................................................................................................................... 19
4. Prognosis for Patients with ADHD ..................................................................................................... 20
5. Discussion ......................................................................................................................................... 20
6. Conclusions ....................................................................................................................................... 20

Abstract

Attention deficit hyperactivity disorder (ADHD) affects 1 to 10% of children and is characterised by a persistent pattern of inattention and/or hyperactivity/impulsivity. Over one-half of children with ADHD have associated conditions, including learning disabilities, conduct disorders, poor coordination, depression, anxiety, obsessive-compulsive disorders and bipolar disorders.

CNS stimulant medication used in the management of ADHD is not permitted for use in competition by the International Olympic Committee (IOC) and this poses a problem for the physicians of patients with ADHD. On the one hand, attention and concentration are improved by stimulant medication and fine motor coordination and balance are improved after methylphenidate administration, but these therapeutic and sport-related benefits are not available to the athlete with ADHD who wishes to compete under IOC rules. It has been suggested that treatment with methylphenidate may be suitable for athletes with ADHD, as cessation
Attention deficit hyperactivity disorder (ADHD) is now recognised as affecting between 1 and 10% of children, with rates of diagnosis varying geographically. ADHD is characterised by a persistent pattern of inattention and/or hyperactivity/impulsivity, with diagnostic criteria having been established by the American Psychiatric Association (Diagnostic and Statistical Manual of Mental Disorders).[1]

Over one-half of children with ADHD have at least 1 associated comorbid condition. These include oppositional defiant disorder (in which children say ‘no’ to everything) in up to 60%, learning disabilities such as dyslexia, language delay disorders or difficulties with mathematics in approximately 50%, conduct disorders in up to 20%, as well as tic disorders, poor coordination, depression, anxiety, obsessive-compulsive disorders and bipolar disorders (which may be associated with rage attacks).[2]

In the context of this disorder, therefore, there are many associated cognitive impairments which affect motor coordination, sequencing, anticipation and planning (amongst other functions), all of which are important in the consideration of ADHD and sport.

Because of increased awareness and more frequent diagnoses of ADHD, it is highly likely that in the future many competitive athletes will be diagnosed with this condition. The significance of this is that one of the mainstays of treatment for patients with ADHD is the use of CNS stimulant medications methylphenidate and dexamphetamine (dexamphetamine, dextroamphetamine). These medications, however, are currently banned from use in competition, placing these athletes, and the physicians providing them their treatment, in a therapeutic dilemma. This article reviews current thinking regarding the diagnosis and management of ADHD, with particular reference to sport and the usage of the CNS stimulants methylphenidate and dexamphetamine.

1. Attention Deficit Hyperactivity Disorder (ADHD)

In 1996, Jarman[3] stated that, ‘The last five years in Australia have been marked by an explosion in the diagnosis and treatment of . . . ADHD’. There is general agreement in the literature that there has been an increased awareness of this condition, both by the medical profession and by the community as a whole.

Initially, the condition was thought to represent ‘poor moral character’. It was then believed to be purely organic in origin and was thus labelled ‘minimal brain dysfunction’ or ‘minimal brain disorder’. In the past decade, ADHD has become recognised as, primarily, a ‘motivational’ disorder characterised by difficulty in inhibiting, initiating or sustaining responses to tasks or stimuli and adhering to rules and instructions – particularly in situations that are not intrinsically interesting or motivating.[4]

These deficiencies are present from early in life and are thought to be predominantly constitutional in origin, although it is recognised that multiple factors (including biological, psychological and social factors) affect the nature of the presenting symptoms.

1.1 Prevalence of ADHD

Although ADHD is being diagnosed more frequently, its prevalence has been difficult to estimate. Rates of diagnosis vary from one country to another and, within the US and Australia, from one state to another.[5,6] The prevalence of ADHD appears to range between 1 to 10% of all elementary school children, and boys are more often affected than girls (in a ratio of 5 : 1 to 10 : 1).[6]

The use of stimulant medication to treat ADHD