Developmental Coordination Disorder

What is Developmental Coordination Disorder?

Developmental Coordination Disorder (DCD) is a motor disorder in children with marked impairment in motor coordination that is considered to be inappropriate for their age and intellectual ability, in the absence of other neurological disorders. This leads to significant interference with their academic achievement and/or activities of daily living including self-care and leisure.

Historically, DCD has also been referred to as congenital maladroitness, developmental dyspraxia, clumsy child, developmental apraxia and agnosia, agnostic ataxia or minimal cerebral palsy/dysfunction. In the 1994 international consensus meeting in London, Ontario, the term “DCD” was accepted as the most appropriate term to use.

How does Developmental Coordination Disorder affect children?

The symptoms of DCD are usually noticed between 6-12 years old. In Hong Kong, the peak age for diagnosis was in early primary school years, with 53% of children diagnosed at the age of 6 or 7 at CAS in 2004. Around one third of these children have problems in gross motor coordination, another one third in fine motor coordination and the rest having both.

Children may first appear as slow learners in climbing stairs, feeding and playing. Mastery of self-care tasks such as dressing and using utensils are also delayed. Later on, problems with academic tasks may appear, including writing, copying and participation in physical education (especially gymnastics) classes.

DCD affects the children's daily functioning and can have significant long-term effects on academic, psychosocial and vocational outcomes. Children with DCD are often misunderstood, teased or bullied. Many have low self esteem, high levels of anxiety and behavioral problems. Avoidance or lack of physical activities or hobbies can lead to obesity and poor physical fitness.

Finally, 20-50% of children with DCD might have other associated problems such as attention deficit disorder / attention deficit hyperactivity disorder, specific language impairment or dyslexia.

Does my child really have Developmental Coordination Disorder?

Other developmental disabilities may present with clumsiness that could be easily confused with DCD. These include mental retardation, autistic spectrum disorder or attention deficit hyperactivity disorder. Furthermore, neurological disorders such as mild cerebral palsy or muscle diseases that present with mild weakness must be ruled out. Therefore, detailed assessment is needed to establish the diagnosis of DCD and other possible causes.

What causes Developmental Coordination Disorder?

The exact cause of DCD has yet to be determined. There is an increased incidence of DCD in premature and low birth-weight children, and family histories of the condition suggest a possible genetic link. No specific brain lesion has been identified.

There is continuing debate on the suggested mechanisms for DCD. These include defects in the processing of visual perceptual information, joint sensation, and integration of different sensory modalities etc. Abnormalities in the execution of movements such as those related to timing, muscle force and balance have also been proposed.

How common is Developmental Coordination Disorder?

Worldwide, about 6-10 children per 100 are affected by DCD, with more cases in boys than girls.

In Hong Kong Child Assessment Service (CAS), 152 and 182 new cases of DCD were diagnosed in 2003 and 2004 respectively. Boys are affected more than girls, with a ratio of about 3-4: 1.

What is the mainstay of treatment for children with Developmental Coordination Disorder?

Specific management of DCD involves training in two aspects. The first is to train the children's underlying deficit in sensory input (such as sense of balance)

to help them organize appropriate movement. The second is to train task-specific skills through breaking down of activities (such as dressing) into small steps to be practised separately, before they perform the complete task.

Education of the children, parents and teachers about DCD is important so that understanding, early treatment and specific accommodations at home and school can be provided.

Can children with Developmental Coordination Disorder grow up normally?

It is difficult to predict the long-term outcome based on the initial presentation of the condition. Although severe cases may persist into adulthood, it is possible for mild problems to improve with time, and some children may catch up with age-appropriate motor performance after training. However, in some children early childhood problems with play and self-care may later on develop into problems with learning, social skills, employment and social participation. These may greatly affect their self-esteem, performance in educational activities and activities of daily living.

Relevant Websites

CanChild Centre for Childhood Disability Research	http://www.canchild.ca
Dyspraxia Foundation	http://www.dyspraxiafoundation.org.uk

Child Assessment Service, Department of Health
Hong Kong Special Administrative Region Government