

Editorial

CDH or DDH?

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Last year, the Japanese Paediatric Orthopaedic Association sent out a questionnaire to its honorary members and executive committee members to determine the most appropriate abbreviation for a condition so-called congenital dislocation of the hip joint. Two abbreviations are currently in use: CDH (congenital dislocation of the hip) and DDH (developmental dysplasia of the hip). In the author's opinion, there was no obvious answer, as both terms refer to a cause of the condition but neither accurately describes the aetiology.

The author believes that, for several reasons, DDH is the more appropriate nomenclature. First, when assessing neonates, teratologic dislocation, a distinct clinical entity, must first be excluded. Michele¹ stated that the term 'teratologic dislocation' refers to the condition where the acetabulum is shallow and rudimentary at birth, and a secondary acetabulum is formed by a markedly deformed and migrated femoral head, which is accompanied by other multiple anomalies. He estimated that the condition represented approximately 2% of all perinatal hip dislocations. Cases of such multiple anomalies can now be clearly differentiated from CDH or DDH by gene diagnosis, and should thus be excluded from the debate about suitable nomenclature.

Second, the so-called CDH is not caused by a single gene, but by multiple genetic factors, as suggested by female dominance in incidence and familial occurrence. Multigenetic diseases such as osteoporosis and rheumatoid arthritis are not called congenital; likewise, this hip disorder should

not be. It is generally accepted by medical professionals that the manifestation of multigenetic disease during the lifetime of a gene carrier depends on certain environmental factors. This hip disorder can develop and even be exacerbated when certain environmental factors are present, but can also recede without further intervention following elimination of those same factors at an early developmental stage. Such cases of spontaneous recovery of hip dysplasia have been frequently encountered in the author's practice.

What are the environmental factors that trigger manifestation of this hip disorder? Both pre- and post-natal factors are thought to be involved. The former includes intra-uterine factors (available intra-uterine space, external pressure, and hormonal influence) and changes accompanying foetal development (changes in limb morphology, muscle strength, and foetal positioning and movement). The latter includes positioning and movement of the lower limbs of neonates. Animal experiments have revealed that hip dislocation is caused by the combined action of the iliopsoas and hamstring muscles.² Hip dislocation developed in all female rats 5 weeks following fixation of their knees in an extended position by intramedullary nailing and administration of progesterone. Hip dislocation did not occur in any animals likewise treated in which either the iliopsoas or hamstring muscle had been severed. Severing of any other muscles around the hip joint did not prevent hip dislocation. This observation suggests that an environment that induces persistent tension of the iliopsoas and hamstrings during both the pre- and

immediate post-natal period may be a primary cause of hip dislocation. Based on these findings, this hip disorder might be prevented if the foetus or neonate is maintained in an environment in which hip and knee joints can be freely flexed and extended in the absence of persistent tension of the iliopsoas and hamstring muscles.

Multiple genetic factors are thought to be involved in the aetiology of this hip disorder, but it is incorrect to use of the term 'congenital' to call it. Its manifestation and progression are subject to perinatal environmental factors. Developmental dysplasia of the hip (DDH) should thus be considered the more appropriate terminology.

REFERENCES

1. Michele AA. Iliopsoas. Springfield: Charles C Thomas; 1962.
2. Yamamuro T, Hama H, Takeda T, Shikata J, Sanada H. Biomechanical and hormonal factors in the etiology of congenital dislocation of the hip joint. *Int Orthop* 1977;1:231-6.