CEREBRAL PALSY IN WESTERN SWEDEN
Epidemiology and function

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This thesis is based on the following papers:

I. Himmelmann K, Hagberg G, Beckung E, Hagberg B, Uvebrant P.
The changing panorama of cerebral palsy in Sweden IX.

II. Himmelmann K, Beckung E, Hagberg G, Uvebrant P.
Gross and fine motor function and accompanying impairments in cerebral palsy.

Dev Med Child Neurol 2006; accepted for publication.

IV. Himmelmann K, Beckung E, Hagberg G, Uvebrant P.
Bilateral spastic cerebral palsy – epidemiology, function and growth.
2006; submitted for publication.
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Aims: To investigate the prevalence and aetiology of cerebral palsy (CP), describe and analyse motor function and accompanying impairments, apply a new classification of unilateral and bilateral CP and describe prevalence, aetiology, function and growth in dyskinetic and bilateral spastic CP.

Material and methods: In a population-based study in western Sweden, the prevalence and aetiology of CP were analysed in children born in 1995-1998. Gross and fine motor function, accompanying impairments and, in the case of dyskinetic and bilateral spastic CP, neurology and growth were recorded in the 1991-1998 birth cohort. For dyskinetic CP, neuroimaging and perinatal factors were reviewed. The prevalence and severity of motor impairment in the birth-year period 1959-1998 were analysed.

Results: The prevalence of CP was 1.92 per 1,000 live births. Spastic hemiplegia, diplegia and tetraplegia accounted for 38%, 35% and 6%, dyskinetic CP for 15% and ataxia for 6% respectively. The aetiology in children born at term was considered to be prenatal in 38%, peri/neonatal in 35% and unclassifiable in 27%. In children born preterm, it was 17%, 49% and 33% respectively. Gross Motor Classification System (GMFCS) levels were distributed at level I in 32%, level II in 29%, level III in 8%, level IV in 15% and level V in 16%. Learning disability was present in 40%, epilepsy in 33% and severe visual impairment in 19%. The severity of the motor impairment correlated to the presence of accompanying impairments and, in children born at term, to the presence of adverse peri/neonatal events. The prevalence of dyskinetic CP was 0.27 per 1,000 live births. The majority were dystonic, 79% were unable to walk and spasticity was present in 69%. Learning disability was present in 73%, epilepsy in 63% and 79% had anarthria. In the children born near term or at term, peri/neonatal adverse events had been present in 81%. The motor impairment was most severe in this group. Neuroimaging revealed isolated late third-trimester lesions in 56% and a combination of early and late third-trimester lesions in 16%. The prevalence of bilateral spastic CP was 0.69 per 1,000 live births. After 1975, children born preterm dominated. A severe motor impairment was found in 46% of the children born at term and in 33% of those born preterm. The GMFCS correlated with the severity of spasticity and deviation in growth.

Conclusion: The prevalence of CP continued to decrease, especially in those born preterm. Hemiplegia was the most common CP type, due to a decrease in preterm diplegia. CP type and motor function combined was an indicator of the total impairment load. Gestational age at birth and peri/neonatal morbidity provided prognostic information. Classification into unilateral and bilateral spastic CP combined with GMFCS level added structure to the CP classification. Dyskinetic CP was dominated by term-born, appropriate for gestational age children, with severe disabilities and underweight at follow-up. Peri/neonatal adverse events were common. The prevalence of bilateral spastic CP had decreased, parallel to a decrease in the severity of motor impairment. Spasticity correlated with motor function.

Key words: cerebral palsy, prevalence, aetiology, motor function, dyskinetic, bilateral spastic, growth