SCOLIOSIS IN CHILDREN WITH CEREBRAL PALSY IN RELATION TO CEREBRAL PALSY TYPES AND GROSS MOTOR FUNCTION CLASSIFICATION SYSTEM (GMFCS)

Institute of Physical Medicine and Rehabilitation "Dr. Miroslav Zotovic", Banja Luka
D. Dragić, S. Pjanić, Đ. Stevanović-Papić

Introduction: Neuromuscular scoliosis is a common deformity in children with Cerebral palsy, which develops during the child's development period.

Objective: To ascertain the presence and severity of the scoliosis in children with cerebral palsy, taking into consideration the CP type and GMFCS level.

Method: 30 stationary treated children, aged 5-14, with different types of CP were analyzed. Clinical evaluation and insight in medical documentation offered the following information: CP type: 1.bilateral spastic form; 2.unilateral spastic form; 3.dyskinetic form; Cobb angle measurements: 1.the curve greater than 30°; 2.less than 30°; 3.no curve present; the GMFCS level (I-V). The scoliosis values in regard to the CP type and GMFCS level were compared. To check the statistical significances of the results, a chi-squared test was used, the level of statistical significance: $p<0.05$.

Results: 80% of children have scoliosis. Most children have scoliosis with a Cobb angle of less than 30° (57%). 23% of the children have a scoliosis greater than 30° (Table1). Most children (60%) have a bilateral spastic form of CP (Table 2). All GMFCS levels are represented (Table 3).

Table 1. Incidence of scoliosis and degree of Cobb curvature

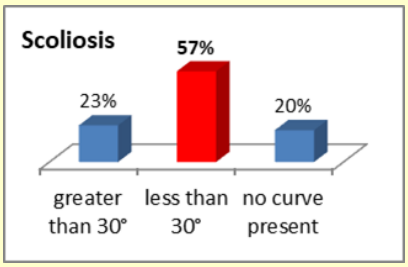


Table 2. CP types in members of the group

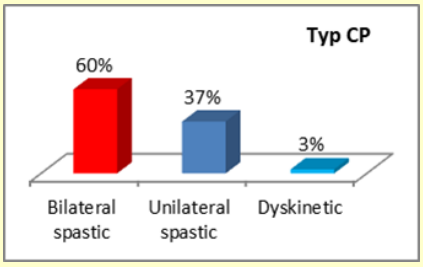
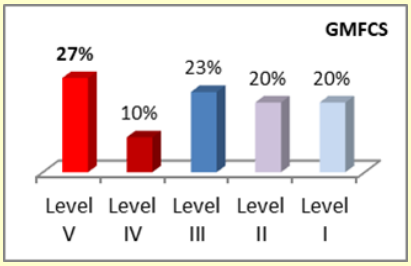
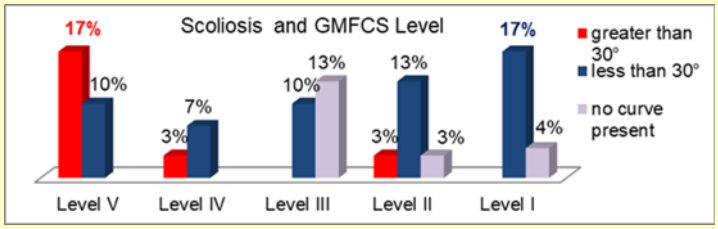


Table 3. The structure of patients according to GMFCS



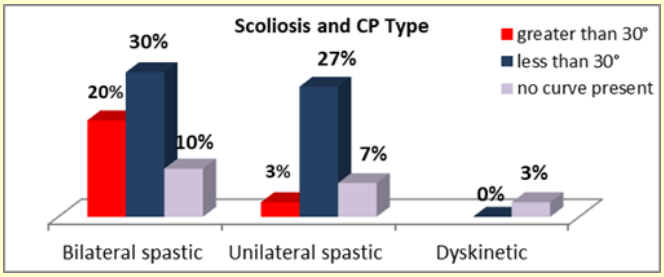
Scoliosis greater than 30° is most prevalent in GMFCS Level V (Table 4), statistical significance ($p<0.05$). Most children without scoliosis are in GMFCS Level III. Almost the same number of patients with a curvature less that 30° belong to Level III. The curvature less than 30° is most common in Level I ($p<0.05$).

Table 4. Scoliosis in relation to GMFCS level



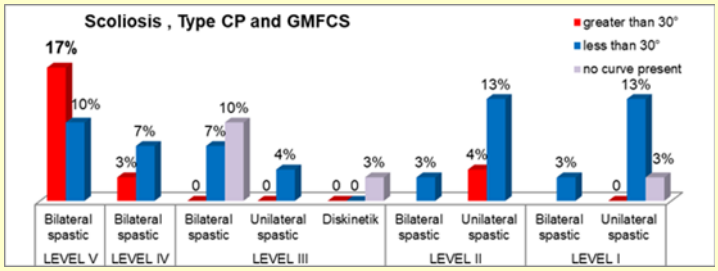
Scoliosis greater than 30° is more common in children with bilateral spastic CP (Table 5). Minor scoliosis is equally present in both spastic types of CP.

Table 5. Scoliosis in relation to Type CP



Scoliosis greater than 30° is more common in children with bilateral spastic form of CP and in children at Level V GMFCS (Table 6), which statistically connects the level of GMFCS and CP Type ($p<0.05$) and the level of GMFCS with the severity of scoliosis ($p<0.05$).

Table 6. Scoliosis in relation to Type CP and GMFCS level



Conclusion: Spine deformities can develop in all forms of CP throughout child growth. Greater spine deformities are more common in children with bilateral spastic type CP and higher level of inefficiency.

References: Rutz E, Brunner R. Management of spinal deformity in cerebral palsy: conservative treatment. J Child Orthop. 2013 Nov;7(5):415-8.
Persson-Bunke M, Hägglund G, Lauge-Pedersen H, Wagner P, Westbom L. Scoliosis in a total population of children with cerebral palsy. Spine (Phila Pa 1976). 2012 May 20;37(12):E708-13.
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