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Biomechanical Etiology of the So-Called Idiopathic Scoliosis. Connection with "Syndrome of Contractures and Deformities". Gait and standing 'at ease' on the right leg in development of spine deformity. New classification. New treatment and causal prophylactics

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Introduction: The biomechanical aetiology of the so-called idiopathic scoliosis [adolescent idiopathic scoliosis (AIS)] was the subject of author research from 1984. First observations during the scholarship in Invalid Foundation Hospital in Helsinki. Next follow the observations in Poland from 1984/1995 to 2007/2018. The result of research were presented from 1995 to 2017 in many Congresses and Symposia in Poland and abroad. First publication was in Germany in 1996 – in Orthopädische Praxis.

Material: In 2017 the whole material gathered 2500 cases. Age of patients 2 to 60 years old. Control group 505 persons. History of observations about aetiology of scoliosis. 1995 – fist lecture about biomechanical aetiology of the so-called idiopathic scoliosis in Szeged, Hungary.

1996 – first publication in Germany – Karski T.: Kontrakturen und Wachstumsstörungen im Hüft- und Beckenbereich in der Ätiologie der sogenannten "Idiopathischen Skoliosen" - biomechanische Überlegungen, Orthopädische Praxis, 3/96, 32:155-160

1997 – was given the observations that the scoliosis children have the habit to stand 'at ease' only on the right leg.

2001 – describing of 1st and 2nd group and types of scoliosis

2004 – describing of 3rd group of scoliosis.

2006 – finished of the observation about "the model of hips movements and type of scoliosis".

2007 – explanation why the full blind children do not hove scoliosis. Describing of the indirect influences from Central Nerve System (CNS) on the spine: a/ extension contracture of trunk just in small children, b/ anterior tilt of pelvis. C/ laxity of joints. Explanation of biomechanical influences to scoliosis. The development of scoliosis in points: A/ Asymmetry of hips movements – smaller adduction in straight position of right hip joint, B/ Permanent standing 'at ease' on the right leg and asymmetric loading during gait, C/ Asymmetry of movement of hips and pelvis – during gait – influence on growing spine – in result stiffness and curves of spine. New classification – three groups and four types - as important information for the therapy and for causal prophylaxis.

(1) "S" I etiopathological (epg) scoliosis. Double curves. Gibbous of the right side. Influence: "gait" and permanent "standing at ease on the right leg". Stiff spine. 3D. Progression.

(2A) "C" II/A epg scoliosis. Influence: permanent "standing at ease on the right leg". One curve. Flexible spine. 1D. No or slight progression.

(2B) "S" II/B epg scoliosis. Influence: permanent "standing at ease on the right leg", plus - laxity of joints or/and incorrect exercises in previous treatment. Flexible spine. 2D or mix. Moderate progression.

(3) "I" III epg scoliosis. Influence: "gait" only. Stiff spine. No curves or small. No progression. No included till now (1995 – 2007) to scoliosis group.

Physiotherapy: All previous extensions, its mean "muscles strengthening exercises" were incorrect and harmful, caused only bigger curves, bigger rib hump and more stiff spine. All stretching exercises for spine and hips are proper for treatment and for prophylaxis. Very important are: karate, taekwondo, aikido and standing 'at ease' on the left leg.

Conclusions: (1) The aetiology of the so-called idiopathic scoliosis is strict biomechanical. (2) There are three groups and four

types of scoliosis – connection with "standing" and with "gait". (3) In therapy and in causal prophylaxis are important - the stretching exercises for hips, pelvis and spine introduced very early – in 3 – 5 years of children's life.

Literature: 1/ T. Karski and co-authors – see article published in Germany, Czech Republic, Hungary, China, in materials of IRSSD, in USA and in Canada – 1996 – 2017. See website point 17 - www.ortopedia.karski.lublin.pl.

Biography

Tomasz Karski studied at Medical University in Lublin and received medical doctor certificate in 1961. During the studies he was active for three years in Students Scientific Orthopaedic Association and later after graduation he was the Assistant Teacher for young student generation. In 1967 and next in 1971 he passed specializations degrees - first and second degree in Orthopaedic Surgery and Traumatology of movement apparatus. In 1972 he received the doctor degree and in 1982 after habilitation (colloquium before Medical University Council) he passed consecutive degrees to receive phd degree and later became Assistant Professor. In 1993 he was awarded by full professor degree and title by President of Poland. Since 1st October 1995 to 2009 he was the Head of Chair and Department of Paediatric Orthopaedics and Rehabilitation of Medical University in Lublin/Poland, in the biggest Paediatric Hospital in Eastern Poland Region.

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