

Summary

Vertigo and postural dysequilibrium belong to the most frequent health disorders; however the diagnostics and therapy of this problem remains unsatisfactory. Quantitative evaluation of postural failure and differential diagnostics of peripheral and central vestibular syndrome belong to the basic vestibulological questions.

The subject of the work is Static Computed Posturography and it's evaluation in the diagnostics and rehabilitation of equilibrium disorders. In the introduction, the anatomy and function of peripheral and central vestibular system is mentioned and their integration to the postural system with other sensory systems (visual, tactile, auditive) is explained. The pathophysiological mechanism of postural failure and its symptomatology is described. Principle of Static Computed Posturography is an objectification of balance at natural stay, however there is no wide consensus in the rating of usefulness of this method for diagnosis assessment and treatment possibility. The aim of this work is to contributing to this question on a base of an analysis of 1398 posturographic measurement performed in the years 2001 – 2005 at the ORL Department, University Hospital Hradec Králové, Czech Republic.

In the beginning of the work proper, the needful measurement sets were analyzed at the editor MS Excell[®]. In the basal set of measurements ($n = 1398$), curves of values distribution were observed and elaborated in the particular parameters (Way, Area, X, Y, AP, LL, RbgW, RbgA). Based on this set and its comparison with a group of persons with normal equilibrium, an six-stepped scale was established, in which persons with normal equilibrium fill the middle three zones. A collection of neurotologic patients ($n = 301$) was than divided into two groups: set of measurements from persons with manifesting dysequilibrium and a set of those with latent equilibrium disorder. These sets were than compared mutually and with the group of persons with normal equilibrium. The findings indicate a small difference between values of persons with manifesting and latent equilibrium disorder. SCPG seems to be important for quantification of equilibrium at patients with postural failure, detection of persons with latent equilibrium disorder and their differentiation from healthy persons.

The qualitative evaluation of equilibrium disorder by means of SCPG was based on a comparison between the measurement values in sets of persons with peripheral, non-peripheral dysequilibrium and normal posture. It was find out, that the postural quantification scale is inapplicable for topodiagnostic purposes, and a new distinct scale had to be created. In the MS Excell[®] application, a formula for topodiagnostic classification was found. By means of this formula a 29,2% sensitivity and 76,8% specificity for topodiagnostic determination was achieved - 29,3% sensitivity and 80,4% specificity for peripheral postural disorder and 28,2% sensitivity and 64,5% specificity for non-peripheral postural disorder. Distinct results for individual vestibulologic diagnoses (e.g. m. Ménière) and risk factors of vestibular impairment (e.g., diabetes mellitus, cardiovascular diseases, vertebrogene disorders with X-ray

documented finding) were obtained. A correlation of SCPG output and acoustic neuroma size was found, too; yet a small amount of these measurements does not allow general deductions and no determination of specific vestibulologic diagnoses is possible anymore. The findings confirm a correlation between age and postural equilibrium capabilities. On the contrary, the effect of sexual dimorphism was not observed.

In the end, the SCPG is disputed from a point of view of medico-legal assessments, limitations of measurement performing and interpretation of SCPG outputs, the method was also appreciated economically.

In conclusion, the SCPG is rated as a benefiting instrumental investigation for primarily objective quantification of postural impairment. The contribution of the method for topodiagnostic purposes is rated as less significant. The method is rated as useful also for other aims (medico-legal assessment, experimental work, vestibular rehabilitation).