

Vestibular function in patients with idiopathic scoliosis

Abstract

The dissertation focuses on evaluating vestibular functions in patients with idiopathic scoliosis (IS) as one of the important factors influencing the etiology of this disease. Clarification of the influence of the altered function of the vestibular system in patients with IS could lead to easier and faster diagnosis and better targeting of treatment through rehabilitation. The main goal of the work was to comprehensively evaluate vestibular functions in patients with IS and to compare it with healthy individuals and patients with defined vestibular dysfunction, which can be monitored in the early phase after cochlear implantation (CI). In these groups, we examined the perception of space, specifically the perception of the subjective visual vertical (SVV), the function of the otolith system using vestibular evoked myogenic potentials (VEMP), postural stability through a stabilometric examination, and the position of the head in space. In patients with IS, we found impaired SVV perception, 38% of patients had abnormal VEMP responses. Patients with IS showed worse postural stability compared to healthy individuals, which was manifested by greater postural deviations in the mediolateral direction. Furthermore, in patients with IS, we noted greater head tilt in the frontal plane during spontaneous posture and found a correlation between the direction of head tilt and the direction of SVV deviation. In contrast, we found that healthy probands perceive SVV during prolonged head tilt to the side opposite to the head tilt side, a different behavior compared to IS patients. In patients after CI, we found that they have a disturbed perception of SVV after the operation, but 14 days after the operation, there is a gradual compensation and a return to physiological values. The results of the work show that many patients with IS show altered vestibular functions compared to healthy individuals and patients after CI.

Keywords

postural stability, vertical perception, scoliosis, vestibular evoked myogenic potentials, head position, etiology, and vestibular system