SOME NEURO-PHYSIOLOGICAL ASPECTS OF TRAFFIC SAFETY

Vasyl Orzheshkovskyi¹, Andrii Bieliatynskiy², Nina Kuzhel³, Iryna Klymenko³, Ludmila Orzheshkovska¹

¹P. I. Shupik National Medical Academy of Post-Graduate Education
   Dorogoźlytska str. 9, Kiev, 04112, Ukraine
   Ph.: +380683606408. E-mail: Vasily_O@voliacable.com

²National Aviation University
   Kosmonavtsa Komarova ave. 1, Kiev, 03680, Ukraine
   Ph.: +380679296437. E-mail: bieliatynskij@mail.ru

³National Transport University
   Susorov str. 1, Kiev, 01010, Ukraine
   Ph.: +380661540475. E-mail: kirak76@mail.ru

Keywords: the cognitive evoked potential, expert estimation of the state of drivers, the traffic safety

From data of World Health Organization, annually as a result of road traffic accident perishes about 1,2 million and over 50 million persons are got by wounds. In accordance with the system of William Haddon a traffic traumatism is the result of violation of co-operation of man, vehicle and environment. The normal psycho-physiological state of driver plays an important role in the prophylaxis of traffic traumatism. The different vascular, neuro-degenerative and metabolic damages of cerebrum in elderly and senile age result in cognitive disorders up to dementia. The age-dependent changes of cognitive functions affect the sphere of memory, psychomotor, visual-spatial, verbally-logical capabilities, increase of time of reaction and other. Prevalence of dementia in a sar and yellow leaf varies from 5 to 30% depending on the probed age-dependent group and in-use diagnostic criteria. Cognitive disorders, which are beyond an age-dependent norm, but does not arrive at expressed dementia, it is accepted to name the term of «Mild cognitive impairments» (MCI) marked for 16.8% elderly and old people. From epidemiology data, 10-15% cases of MCI during one year are transformed in dementia, and for 4 years of supervision dementia develops for 55-70% patients with the syndrome of MCI. Early diagnostics of these states prevents appearance on the roads of inadequately reactive drivers and diminishes a traffic traumatism.

For screening of cognitive violations different test scales are usually used, in particular MMSE. However among the new methods of neuro-physiology the cognitive evoked potential (CEP) of P300 allow during of short duration time objectively to estimate the integrative function of cerebrum and expose cognitive violations on the early stages. The latency and amplitude of complex P300 have the expressly outlined scopes of norm for all of age-dependent groups. Early cognitive violations, related to the foregoing damages of brain, and also with the protracted abuse of alcohol, some drugs, and also with the syndrome of sleepy apnoea and narcolepsy, reflected in the change of parameters of P300. Often at expert examination of neurologist these cognitive disorders remain not recognized and a driver gets admitting to the management a vehicle. Plugging of CEP in the standard of expert estimation of the state of drivers in age from 60 years and more senior will allow reducing a traffic traumatism.