

## 7 SUMMARY

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Visual evoked potentials (VEPs) are being used for evaluation of visual system functions from the retina up to the level of visual cortical brain areas. The pattern-reversal visual stimulation (with high contrast of pattern elements) is almost exclusively world-wide used for these purposes so far. It activates mainly the parvocellular system/ventral stream of the visual pathway. In pattern-reversal VEPs recorded from the striate cortical area, latency and amplitude of the main P100 peak are evaluated.

In our lab the stimulation method using a low contrast moving structure has been developed, which enables to assess also reactions of the extrastriate visual areas mediated through the magnocellular system/dorsal stream of the visual pathway. Reactions to the onset of motion in the visual field (motion-onset VEPs = M-VEPs) are being introduced to clinical practice because they enable to detect selective or earlier involvements of the visual motion-processing system (e.g. in demyelination of the optic nerves or their inflammation, compression, toxic involvement, in glaucoma, dyslexia, encephalopathies, etc.). For introducing of the new method it was still necessary to verify a possible dependence of M-VEPs parameters (mainly latency and amplitude of the motion-onset specific N2 peak in various motion stimuli) on some factors which can potentially influence them. **Testing of the influence of gender, age and physiological variations of glycemia was the subject of my postgraduate studies and the topic of my Ph.D. thesis.**

In the group of 70 healthy subjects with the age span of 6 - 60 years (with about the same proportion of both sexes in 7 age subgroups of 10 subjects), pattern-reversal VEPs with three check sizes (40', 20' a 10') and M-VEPs with four variants of moving stimuli (linear

translation motion, radial motion -expansion/contraction in the full field (28° x 37°) and separately in the central 8° and in the periphery outside the central 20°) were examined.

- No differences were found in all VEP variants between sexes.
- Latencies of the pattern-reversal VEPs display shortening up to the age of 18 years, which signalizes very slow maturation of the magnocellular system.
- The latency of M-VEPs (mainly to peripheral radial motion) exhibited the most significant correlation (linear) with age of adult subjects (6-18 years: correl. coeff. - 0.85; 19-60 years: correl. coeff. 0.66)
- This study proved a need for age related norms in M-VEP examination.

In a group of 28 subjects an influence of physiological changes of glycemia on VEPs was tested (after 24 hours starving and after 90 minutes of intensive physical activity).

- No differences of all VEPs parameters were found related to glycemia. This means that VEP results interpretation in patients can be done without knowledge of the actual glycemia.