

tween primates (monkeys) and carnivores (cats) in the extent of structural changes in the striate cortex on the basis of what is known from the literature and taking physiological factors into consideration (monkeys are mainly diurnal animals, whereas cats are chiefly nocturnal). In our view, there exists, at the level of the subcortical visual centers and striate cortex, a morphological substrate for the two distinct parallel mechanisms of vision — central and peripheral. Peripheral vision is less vulnerable to insults such as deafferentation than central vision, and the stability of the mechanism of peripheral vision may play a substantial role in

compensating for disorders of vision when structures of the visual analyzer are damaged.

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Correlation between the Temperature and Morphological Asymmetry of Human Ears and Its Relation to the Mnestic Pattern

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A correlation is found between the temperature and morphological asymmetry of human ears and the mnestic pattern. The temperature asymmetry at the anterior surface of the ear is more pronounced for brain injury.

Key Words: *biologically active points of the skin; psychology; temperature and morphological asymmetry of the ears; brain damage*

In previous study [2] we presented the results of experiments which showed that there is a correlation between the temperature at the biologically active points (BAP) of the ear and the results of psychological testing. We suggested that this phenomenon is associated with the regulation of the blood flow in the human brain and ear.

The aim of the present study was to compare the results of thermo- and morphometry of the

ears with the mnestic pattern of human beings in health and pathology.

MATERIALS AND METHODS

A total of some thousand persons were examined, including 170 adults, 12 patients with brain injury, and 40 neonates, the remaining examinees being preschool- and school-age (300 and 450, respectively) children.

The mnestic pattern (left-brain or right-brain) was determined in the group of adults by psychological testing after Shalven-Hermann [3]. The temperature was measured at symmetrical BAP of

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the anterior surface of the ears with a specially designed low-inertia thermometer [2]. In the uppermost part of the ear the zones of the "foot point" and "finger point" were studied, in the middle part the "helix point", and in the lower part, or on the ear lobe, the "eye point" [4]. We recorded the largest difference between the temperatures at symmetrical points. The length of the ears was chosen as a morphological parameter, the difference, i.e., asymmetry, being recorded.

RESULTS

After psychological testing the group of 170 adult examinees was divided into 97 "right-brain" and 73 "left-brain" persons. In 70 persons from the first group the temperature of BAP of the right ear proved to be lower, and the length, in the majority of examinees (74%), to be greater than the corresponding parameters of the left ear. In the "left-brain" group these correlations were the opposite: the left ear proved to be cooler and longer than the right.

In health the differences between the temperatures in symmetrical zones of the anterior surface of the human ear does not exceed 1°C; for other parts of the body this difference is smaller (0.3°C). In 10 out of 12 patients with brain injury the temperature asymmetry of the skin of the ears surpassed the normal limits. Rheoencephalographic investigation showed disturbances of the cerebral blood flow in these cases.

The absence of pronounced temperature asymmetry between the ears and isothermia are typical of neonates. In 5 cases where birth trauma was diagnosed marked temperature asymmetry was observed (more than 1°C). In the same cases we managed to trace changes in the temperature of the ears during local cooling of the head of the newborn with a compress. The skin temperature on the anterior surface of the ear at the side where

cooling was performed was found to drop first (after 5 min). This provides evidence of the reflex nature of this phenomenon.

In preschool-age children the temperature asymmetry and the temperature pattern over the anterior surface of the ears do not differ reliably from those in adult persons. In 6 out of 13 cases where a temperature difference of more than 1°C was found, birth trauma was recorded in the case history, and in 2 cases hydrocephalus was a result of this trauma. Morphometric asymmetry of the ears was much more rare in this group than in adults (in 12% of cases), and in the rest of the cases the difference did not surpass the error of measurement, i.e., 0.5 mm.

The morphometric asymmetry was more frequent in school-age children (44%) than in preschool-age children. In 72% of cases the same regularity was revealed: the longer ear is the cooler.

Analysis of the results of psychological tests demonstrated that the majority of questions yield no information in this case. In our view, analysis of the academic achievement of schoolchildren sheds more light. The number of schoolchildren with good and excellent grades proved to be 28% higher among examinees with a leftward temperature and morphological asymmetry (the left ear is cooler and longer) than among the "rightward" persons. We perceive a connection between these results and the conclusion drawn by Arshavskii *et al.* [1] that "left-brain" children more readily adapt to the modern school curriculum.

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