

# TEMPERATURE OF THE SURFACE OF THE EYE IN THE PROJECTION OF THE CILIARY BODY IN RABBITS DURING THERAPEUTIC HYPOTREMIA AT 10° C

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**Introduction.** In various fields of medicine, therapeutic hypothermia has been actively researched for the past few decades. In ophthalmology, there are only single works on therapeutic hypothermia.

**Purpose.** To study the dynamics of the temperature of the eye surface in the projection of the ciliary body in rabbits with transpalpebral therapeutic hypothermia of 10° C in normal conditions.

**Materials and methods.** The study was conducted on 24 Chinchilla rabbits (48 eyes). For therapeutic hypothermia (contact cooling) of the eye, a special thermoelectric device in the form of a monocular bandage was used for controlled local contact cooling of eye structures. The duration of hypothermic exposure was 30 minutes. The local temperature of the eyeball in the projection of the ciliary body was recorded every 10 minutes. After the end of the hypothermia process, the fixation of the local temperature of the eye was continued every 10 min for 40 min.

**Results.** Before hypothermia, the temperature of the surface of the eye in the projection of the ciliary body was on average 34.19°C, (SD 0.43). At 10 minutes, the temperature of the eye surface in the projection of the ciliary body decreased significantly to 29.64°C (SD 0.74). At 20 minutes, the temperature continued to decrease and was 29.38°C, (SD 0.72). But in comparison with hypothermia, there was no further statistically significant temperature drop within 10 minutes. And after 30 minutes of hypothermia, the temperature of the eye surface in the projection of the ciliary body decreased significantly by 0.45 °C  $p=0.00$  and amounted to 28.93 °C (SD 0.48). At the same time, the temperature difference between the temperature of the eye surface at 10 minutes of hypothermia and at 30 minutes of 0.72 °C is significant.

After 30 minutes, the hypothermic effect was stopped, and we observed how the process of restoring the temperature of the eye surface would proceed. 10 minutes after the end of hypothermia, the temperature rose significantly to 32.8 °C (SD=1.26)  $p=0.00$ . But there is a significant difference between the initial temperature, which is 1.4 °C ( $p=0.00$ ). 20 minutes after the end of hypothermia, the temperature rose significantly by 0.68 °C and reached 33.47 °C (SD=1.04),  $p=0.00$ . There is also a significant difference between the initial temperature, which is 1.4 °C ( $p=0.00$ ). At 30 minutes, the increase in temperature stopped and there was an insignificant temperature drop to 33.32 °C (SD=1.09)  $p=0.2$ . And at 40 minutes, the temperature rose again by 0.06 °C, but insignificantly to 33.38 °C (SD=0.9)  $p=0.5$ . At the same time, there is a significant difference with the initial temperature before hypothermia of 0.82 °C  $p=0.00$ .

**Conclusion.** When studying the dynamics of the temperature of the surface of the eye in the projection of the ciliary body in rabbits during transpalpebral therapeutic hypothermia of 10°C in the norm at the 30th minute of hypothermia, the temperature was 28.93°C. During 40 minutes of observation after the end of hypothermia, there was no normalization of the temperature (34.19 °C) relative to the initial one. 20 minutes after the end of hypothermia, the temperature rose to 33.47 °C, and for another 20 minutes there were insignificant fluctuations by a few tenths of degrees. Taking into account the process of restoration of the eye temperature after the end of the hypothermia process, we confirmed theses about the autonomy of eye homeostasis.