

sively as possible irrespective of being any neurologic findings or not. But in the case of a college student who dies from being hit during the bouts held in August, 1967, we could not find any abnormalities in clinical examination and EEG when we performed a physical examination on him in April, 1967, but we found that he hardly approved himself normal as far as Uchida-Kraepelin's test was concerned.

Judging from this case, if it is possible for us to perceive boxers latent brain injuries following repeated head blows through some psychological tests given collectively, it will be helpful in preventing boxers' brain injuries and studying chronic symptoms of head injuries.

Some medical reports published that there were the same findings in the chronic symptoms of head injuries as in the anatomical study of punch drunker. Here I'd like to publish this first report in expectation of such a helpful role of psychological tests concerning studies on chronic symptoms of general head injuries and prevention of boxers' brain injuries.

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## **168. Electromicroscopic Change of the Capillary in the Great Occipital Nerve following Regional Cooling**

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Post-traumatic chronic headache can be classified into four groups; muscular, vascular, neuralgic and psycho-neurotic headache. Of these, neuralgic headache with pain distributing to either the area supplied by the ophthalmic nerve or by the great occipital nerve is fairly common in Japan, although the patients may have two or more types combined. There are a good number of cases which suggest the influence of the regional cooling of the forehead or the occipital region of the head using ice bag or/and ice pillow, a common practice in Japan. This is a report of a series of animal experiments aimed to clarify the influence of regional cooling on the capillary of the occipital nerve.

After cooling the occipital area of the skin of the rabbit in 2 to 4°C for 3 hours, the capillaries of the occipital nerve dilate associated with thinning of the capillary wall. As the early state of sludge phenomenon, erythrocytes cluster in the lumen losing their original round or oval contour. Decreased pinocytotic vesicles and mitochondria indicate lowered metabolism in the cells.

When the rabbit was left for two weeks following regional cooling of 3 hour duration, dilatation of the capillary and thinning of the capillary wall become more distinct and vacuoles increase.

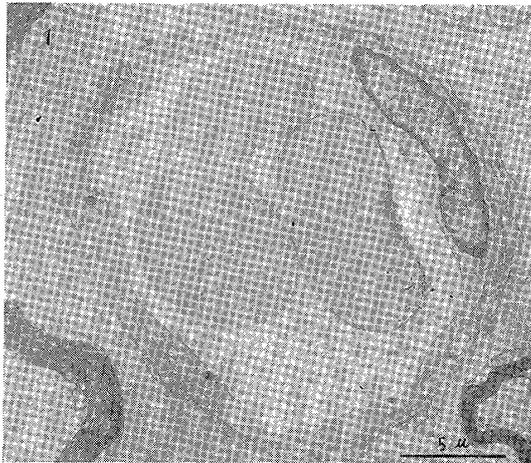


Photo. 1. The normal capillary in the great occipital nerve of the rabbit.  $\times 4,500$

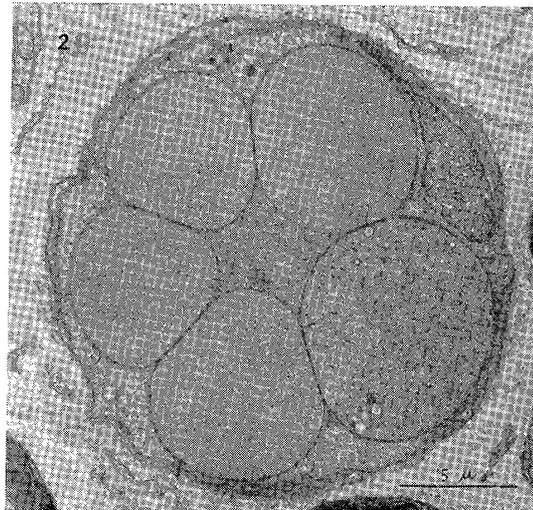


Photo. 2. After cooling the occipital area of the skin of the rabbit in 2 to 4°C for 3 hours  $\times 4,900$

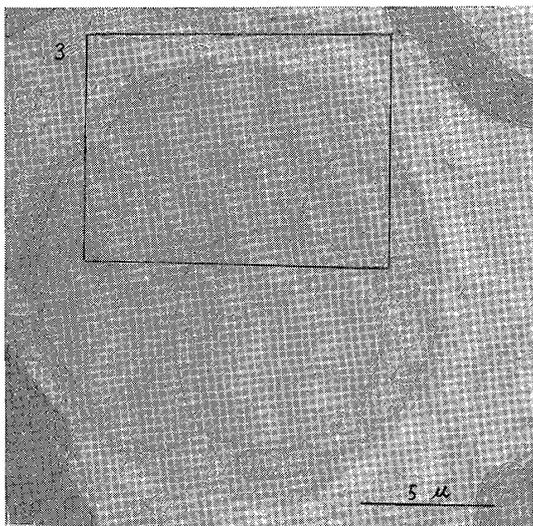


Photo. 3. The rabbit was left for two weeks following regional cooling of 3 hours duration.  $\times 5,600$

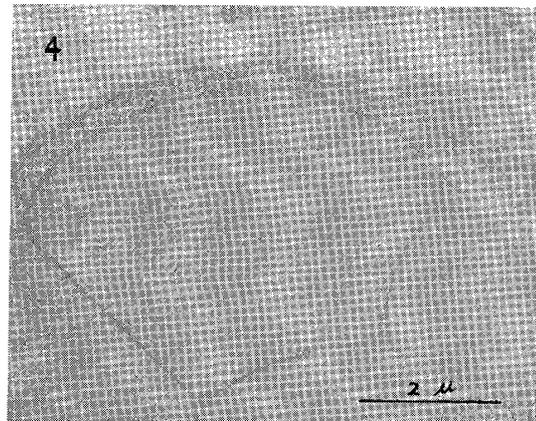


Photo. 4. The higher magnification of Photo 3.  $\square \times 15,000$

If the rabbit was examined two months after regional cooling of 3 hour duration, the capillary is dilated with thinner wall. The erythrocytes are glued together in stone wall pattern and obliterate the capillary.

Therefore, it can be inferred that regional cooling of the skin causes capillary insufficiency and occlusion of the capillary at the end, thus contributing to the degenerative change of the nerve tissue due to hypoxia resulting in irritability and lowered pain threshold of the great occipital nerve.