C. Increased Intracranial Pressure and Brain Edema

C-1. The Change of Lysosomal Enzymes in Brain Edema

Noboru MIYAZAWA, Yukio KOBAYASHI and Komei UEKI

*Department of Neurosurgery, Brain Research
Institute of Niigata University*

Recently, it has been said that lysosomal enzymes seem to be one of the edema producing factor, so that lysosomal enzymes existing in normal tissues are activated in focal injured area and penetrate into the surrounding tissue, resulting in brain edema.

So this study was designed to examine this hypothesis.

Experimental procedure: Cold injury was produced at adult albino rat, and decapitation was done at the expected time. The sample was prepared from the focal injured area and the surrounding area. The activity of each sample was expressed as total and free. The total activity was determined in incubation medium containing final concentration 0.1% Triton X. Free activity was determined in crude enzymic source of supernatant of c.f.g. at 105400g of 5% homogenate.

Result: 1) In the injured area directly, total activity decreased for 24 hours after injury. Then it increased rapidly and reached at sixteen times as much as the normal level on the seventh day whereas free activity increased gradually. This change of total activity in focal injured area seems to reflect the pathological process in lesion, necrosis, bleeding, and reactive gliosis.

2) In the surrounding area, total activity showed a slight decrease at the early stage, and a slight increase on the fifth days. Whereas free activity showed so significant change. Summarizing 1) and 2), the released enzymic activity in focal injured area did not detected in the surrounding area. Probably released enzymes were absorbed into blood circulation, C.S.F. and edema fluid.

Conclusion: 1) The hypothesis could not be proved apparently that released lysosomal enzymes in the focal injured area penetrate into the surrounding area.

2) In brain edema like injury of other tissues, lysosomal enzymic activity also changed as one aspect of cell metabolic disturbances.

C-2. Morphological Changes of the Glial Cells Produced by the Lysosomal Dysfunction

Masatoshi HOMMA, Kiyoshi SATO and Shozo ISHII

*Department of Neurosurgery, Juntendo University
School of Medicine, Hongo, Tokyo*