S-E-6. Defense of Blood-Brain-Barrier

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Brain edema or brain swelling is the phenomenon that fluid content in the brain tissue increase due to the break down of the blood-brain barrier. Therefore restoration or defense of the blood-brain barrier should be thought to be the essential treatment of brain edema. We have already demonstrated adrenocortical steroid reveals these functions. This time the authors would like to emphasize two points in actual treatment of brain edema, i.e., administration of large dosis and prompt starting of the treatment. For demonstrating these facts following examinations are very instructive:

a) We made brain edema of the dog by artificial embolisation of carotid artery with sesami oil. Uptake of RISA in the dogs' brain could be decreased with administration of 10 mg/kg of prednisolone while 5 mg/kg 2 mg/kg of prednisolone make least difference from non treated.

b) Artificial brain contusion was made in the brain of hare by operative compression. The hares with 5 mg/kg of prednisolone revealed the mortality of 37%, with 0.5 mg/kg, 53% was dead while non treated group showed 85% mortality.

c) We made experimental head injury of the rats by hitting with special apparatus. These rats were administered 10 mg/day of prednisolone for one week. These rats were devided into three groups. In one group the steroid treatment was begun soon after the injury was made, in other two groups beginning of the treatment was delayed one hour and six hours respectively. These delay lessened the survived, especially six hours delay made their mortality almost the same with non treated group.

With the above mentioned facts, optimal method of the steroid therapy was almost established, but the mechanism of this medicine is still unknown. For this purpose we tried microautoradiography with H\(^3\)-labelled hydrocortison, and accumulation of the grain were found in glial cells and perivascular space.