39. Pre- and Post-operative Blood Volumes Determinations on Neurosurgery

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Authors investigated blood loss during neurosurgery on some fifty cases being carried out both pre- and post-operative blood volume determinations where Red Cell Volumes and Plasma Volumes were dually obtained by means of Radioisotopes of Cr⁵¹-labelled Red Cells for the former and RISA for the latter. Simultaneously, there were also blood loss estimated by weighing sponges and gauzes and measuring suction bottles, and those estimations were calculated to be multiplied one and a half times and then reduced Saline used for irrigation of the surgical field.

Though blood loss were replaced on the basis of the above mentioned calculation, the most cases presented normovolemic hypocytemia postoperative days which aggravated on the second day while there were none of hypocytemia preoperatively. A two weeks was usually course to recover those postoperative anemia. Those hypocytemia, however, were not observed when blood replacement had been carried out on the basis of Red Cell Volumes measured by authors where the loss revealed 70% over the calculation.

Further, authors noticed that blood loss was increased statistically when Mannitol was administered during surgery.

40. Postoperative Treatment of the Brain Surgery with Respect to Water and Electrolytes Metabolism, Cardio- Pulmonal and Hepatic Circulation

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Following the surgical operation of the patients with brain diseases, such as tumor, hematoma and vascular diseases, particularly glioblastoma,

Total Body Water including Intracellular, Extracellular or Interstitial Fluid Volumes tended to increase, frequently to be edematous.

There were moderate decrease in Extracellular and Intracellular Fluid Volumes and reduction of Total Body Water following the infusion of hypertonic urea solution (60 g. per day for 3 days), whereas serum Na concentration was elevated slightly and urinary Na and K excretion risen.

After urea was given, 3 g. per kg. of rabbit for 3 days, to the animal under the starvation, severe water depletion and marked increase in serum electrolytes and urea concentrations occurred by far greater than control animals under the normal diets, which means fluid therapy is an important factor affecting on the clinical effect of urea.

In chronic subdural hematoma, there were improvements of the average pulmonary circulating time and pulmonary blood volume, although temporary reduction of cardiac output appeared. In contrast, there was no significant changes in cases with brain tumor. However, in cases with unconsciousness either before or after the surgical operation for brain tumor or chronic subdural hematoma, decrease in cardiac output and increase in the pulmonary blood volume and average pulmonary circulating time were predominant. Therefore, pulmonary complications are considered to take place more frequently in cases with unconsciousness or long-lasting increase of intracranial pressure, so that adequate treatment to increase cardiac output should be performed after the operation.

41. Review of Cases Expiring after Brain Tumor Surgery

—Especially on Postoperative Complications—

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During the five-year period from 1959 to 1963 this Department histologically confirmed 118 cases of brain tumor, of which 109 were detected by surgery and 9 cases (expiring prior to surgery) by autopsy. When compared with the brain tumor statistics of Japan in 1963 compiled by Ueki, it was found that in our study the rate of glioma was higher, meningioma lower, and pinealoma remarkably higher.

Of the 118 cases which underwent surgery, 25 cases or 22.8% died within one month following surgery. A review was made on the causes of