b-8. Study of Intracranial Pressure by Direct and Continuous Measurement—Second Report

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In the first report of this study, we demonstrated our newly designed intracranial pressure measuring device consisting of a semiconductor strain gauge of 2 mm. in thickness and 10 mm. in diameter. With this device, the brain pressure can be measured with the accuracy of 2 mm. of H₂O and can be recorded

continuously on the recording apparatus. In addition to the pressure wave and plateau wave of the brain pressure, a smaller pulse wave can be readily observed.

In the animal experiment, we confirmed that the amplitude of pulse wave increases according to the elevation of intracranial pressure. We consider this phenomenon to be the change of cushion effect of the brain parenchyma due to the elevation of brain tension; however, several other factors should be taken into account. This is interesting because observation of pulse wave may give indirect information of increased intracranial pressure, for example, by observation of midline echo by ultrasonic means.

In this report, we demonstrated the pattern of continuously recorded intracranial pressure in various neurosurgical procedures such as during and after craniotomies, air studies, V-A anastomotic procedures or the influence of general anesthesia. The figure shown is one of the examples which shows the change of intracranial pressure during and after the pumping of V-A shunt. After pumping, the brain pressure decreases in the manner of undulatory attenuation manner.