ergotropic circuits.

After destruction of the unilateral posterior hypothalamus, the hippocampal arousal waves disappeared and the cat became hypoactive and somnolent. After bilateral destruction of the posterior hypothalamus, the hypoactive and somnolent states were remarkably increased and deep sleep patterns were observed in electrography. These changes could be interpreted as a state of dominance of the trophotropic circuits.

11. Stereotaxic CEM-Thalamotomy for Relief of Intractable Visceral Pain — Experimental Bases and Clinical Report —

Miyoshi URABE, Takashi TSUBOKAWA, Hiraki SAKURAI, Makoto KIKUCHI,
Sadamitsu MUKAI, Satoru KADOYA, Yukio SEKI,
Yoh WATANABE and Noboru HAMABE

Dept. of Surgery (I), School of Medicine, University of Kanazawa

The stereotaxic thalamotomy have not yet found the acceptance of corresponding procedures for the relief of extrapyramidal motor disorder, although lesions have been produced for the treatment in the nucleus dorsomedialis (Spiegel & Wycis), the nucleus ventralis posterior (Talairach), nucleus ventralis caudalis parvocellularis (Reichert et al.) and the posterior thalamic area (Mark et al.).

The failure or the difficulty to relief intractable pain by means of thalamotomy was caused by the complicated pain receiving system in the thalamus and its function.

Our experimental data on the inhibitory and facilitatory mechanisms of the splanchnic afferent impulses in the central nervous system showed that the receiving mechanisms of visceral afferent impulses in the nucleus centrum medianum (CEM) were very differ from those of the nucleus ventralis posterior, the mesencephalon and the spinal cord. The following facts were recognized in the CEM: 1) there are convergence neurons between the viscerosensory and somatosensory fibers, 2) the evoked potential elicited splanchnic stimulation does not follow 10/sec stimuli and does not show P.T.P., 3) spindle bursts (25~27/sec) are produced in a state of appearance of P.T.P. following high frequency stimulation of splanchnic nerve, and 4) these spindle bursts are also produced by cortical strychnization. On the other hand, unital action potentials on the mesencephalic reticular formation elicited by noxious stimuli are facilitated by the stimulation of the CEM (10~100/sec).

According to the experimental data, it was concluded that the CEM had important and essential role to control the receptive activity in the central nervous system of the visceral pain sensation, which related with the cortex, midbrain reticular formation and limbic system.

In our clinical material who had advanced malignant disease, the lesions were produced in the CEM bilaterally to relief intractable visceral pain. The stimulating tests of the CEM were performed during the operation in order to make clear the functions of the CEM and to correct electrode placement. The effects upon behavior, EEG and evoked potential were the same as experimental data.

12. Study on the Stereotactic Surgery by localized Cooling and Freezing

Yuji MIYAZAKI and Teruyoshi HASHIBA

Sapporo Medical College and Hospital

The objects of use the localized cooling to $+3\sim+5^{\circ}\text{C}$ is the production of temporary and reversible intracerebral lesion and this cooling reversible lesion is very valuable in stereotactic operation to find the good effective target, particularly in cases of cerebral palsy. The area of reversible lesion made by long slender refrigeration brain probe sized in 2 mm in diameter by slow cooling is 4 mm in diameter.

The long slender refrigeration probe is able to use to make a permanent lesion by freezing to below 0°C . The fundamental studies were done on the possibility of use the freezing method for permanent lesion.

The freezing lesion is localized, sharply circumscribed and adjacent to intact normal brain in 1 mm from the edge of the lesion. On the other hand, the freezing lesion has great disadvantage in predictability and reproducibility. From datas of our own animal experiments in cats and dogs, the size of the freezing lesion has great deal of variation even when the freezing temperature and the duration are constant.

As Dr. Balthasar shown in 1957, some freezing lesion in brain have hemorrhage within the brain lesion itself. We have found the incidence of gross hemorrhage to be greatest when the rate of freezing is rapid.