4. The Effects of Autonomic Drugs and Stereotaxic Brain Operation against the Tremor

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Adrenaline (ADR), noradrenaline (NOR) and acetylcholine (ACH) were given intramuscularly to the patients with tremor induced by electrical stimulation of putamen, in order to observe effects of the drugs upon the tremor.

In cases of ADR injection, the amplitude of the tremor markedly increased and the threshold of stimulus decreased. The effects of NOR were almost similar to those of ADR. In cases of ACH, however, the amplitude of tremor decreased and threshold of stimulus increased.

ADR, NOR and ACH were also given to the patients suffering from tremor of various diseases. In cases with tremor at rest, the amplitude of tremor always increased with ADR and decreased with ACH. That is to say, the effects upon the Parkinsonian tremor were almost the same as those upon induced tremor.

On the other hand, in cases with tremor at intention, the effects were not always similar to those in Parkinsonian tremor.

In our department of surgery, electrical destruction of V.O.P. in the thalamus was performed in cases with tremor as a way of treatment. The autonomic drugs were administered as a preoperative examination. The forms of tremor were thus classified from the drugs effects.

Relationships between the effects of drugs on tremor and those of stereotactic surgical treatments were clarified.

5. Quantitative Measurement of Rigidity and Tremor, especially the Latter One

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The rigidity of parkinsonismus has been measured objectively and quantitatively by our “Rigidity Measure” and electromyograph in our clinic. Some indication has been made on the operability and the results of the
treatment by this method.

We have originally established a new method by which the much more accurate and objective recording of tremor has been done in comparison with electromyography. Tremor or tremulousness of four extremities is observed not only on the cases of parkinsonismus, alcoholismus and arteriosclerosis, but also on normal person at strong intention, at fatigue, in cold and so forth. There are different ways to measure tremor, such as electromyography, systems employing beams of light, strain gauges etc. However, these methods cannot record all of frequency, amplitude, wave form, speed and dimension of tremor. Moreover, their results of recording are sometimes very difficult to read and the measuring management is cumbersome, or contains more or less some artifact.

After researching electromagnetically we have manufactured originally a very small and light apparatus, attachable to any part of the patient in any posture without giving either pain or emotional blow. In this method tremor is once modulated to high frequency 455KC/S which is able to be easily amplified and returnd to the former frequency. With this frequency modulation, tremor record keeps high sensitivity and high fidelity to the patient tremor, so as to be read and traced its prosperity and decay by every physician without difficulty when the initial recording condition is determined. We have recorded and discussed tremors of patients with parkinsonismus, hepatitis and cerebellar intention tremor and of normal person.

6. Some New Findings in the Stereotactic Operation on Ventro-Lateral Nucleus of the Thalamus

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This report is to introduce some functional significances of the ventro-lateral nucleus (V.L.), which have newly been noted in the observation of 78 cases operated upon in our Department of Surgery.

1) Indication of V.L.-tomy

Tremor induced with electrical stimulation of V.L. in patients without tremor was of 6–7 c.p.s. frequency.

In cases with tremor of 5–7 c.p.c. frequency, V.L.-tomy was always