REPORT OF THE FIRST INTERNATIONAL CONGRESS OF NEUROLOGICAL SCIENCES, BRUSSELS, BELGIUM, JULY 21–27, 1957

The six medical disciplines that formed the First International Congress of Neurological Sciences met first in joint session and then separated into their sectional meetings.

JOINT SESSIONS

SYMPOSIUM ON EXTRAPYRAMIDAL PATHOLOGY

Under the direction of Professor Raymond Garcin (Paris, France), the symposium on "Extrapyramidal Pathology" expressed, but did not answer, many of the problems that have arisen with the current reawakened interest in abnormal involuntary movements. One of the major problems was to explain the success of the treatment of Parkinsonism and other disorders of involuntary movement by making lesions in the globus pallidus. P. C. Bucy (Chicago, Ill., USA) was of the strong opinion that all the benefits from this type of treatment result from destruction of a portion of the pyramidal fibers of the internal capsule adjacent to the globus pallidus. The investigators who have had considerable experience with the surgical treatment of Parkinsonism, led by A. E. Walker (Baltimore, Md., USA) and H. Narabayashi (Tokyo, Japan), were of the opinion that lesions of the globus pallidus have a specific beneficial effect upon the "extrapyramidal diseases," and do not depend upon damage of the pyramidal system. The neurophysiologists reported some basic work which will aid in the measurement of motor control from higher centers and promises to shed future light on the control that the globus pallidus exerts upon the rigidity and tremor of Parkinsonism. R. Granit (Stockholm, Sweden) reported on his investigation of the "gamma loop" with intracellular electrodes. These loops connect small neurones in the anterior horns of the spinal cord with muscle spindles. A discharge from the gamma loop activates the muscle spindle and precedes all but the very fast reflex contractions of a muscle bundle. The activity of the loop is a facilitatory influence on the ventral horn cells. The gamma cells are in turn facilitated by supraspinal centers, particularly the reticular activating system of the brain stem. The interchange of facilitatory stimuli between the reticular activating system and various portions of the basal ganglia was eluded too frequently by the clinicians in their discussion of extrapyramidal disorders. Data gathered from stimulation and pickup studies with implanted electrodes in human subjects, led F. A. Mettler (New York, N.Y., USA) to believe that the globus pallidus is the highest level of the proprioceptive circuit. An attempt to use these neurophysiological data clinically is being made by G. Schaltenbrand and Hufschmidt (Würzburg, Germany). They measure tension, resistance and the electromyograph in extremities that are being put through a standard routine of passive exercise by a motor. They feel that the gamma loop system is responsible for the alterations in rigidity and tremor which they demonstrated during changes of emotional state and other bodily functions in individuals with extrapyramidal disorders.

Both J. G. Greenfield (London, England) and R. Hassler (Freiburg, Germany) believe that the primary cause of the symptoms of Parkinsonism is a lesion in the zona compacta of the substantia nigra. A statistical study made by J. W. T. Redfearn
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(Forest Green, England) of all the reports of postencephalitic Parkinsonism since 1923 also indicated that those with marked tremor had lesions of the substantia nigra. Those without much tremor had lesions in the substantia nigra, but they had additional lesions in the reticular formation of the brain stem. He concluded that the lesion in the reticular formation had either prevented the tremor from developing or abolished it after it had developed. L. H. Schreiner et al. (Rochester, Minn., USA) produced tremor, cogwheel rigidity and poverty of movement and facial expression in monkeys by making lesions in the reticular formation of the midbrain immediately overlying the substantia nigra at the level of the red nucleus. These symptoms could be stopped in the contralateral limbs by making lesions in the caudal portion of the globus pallidus. Greenfield was of the opinion that the choreiform movements of choreo-athetosis are caused by a lesion in the corpus Luysii, and the spastic component of the disorder arises from scattered lesions in other parts of the basal ganglia.

SYMPOSIUM ON THE STATES OF CONSCIOUSNESS IN NEUROLOGY

This symposium brought up again the old discussion of how much of the brain is needed to preserve consciousness. F. M. R. Walshe (London, England) is of the opinion that consciousness demands all the structural facilities that the nervous system can provide. Percival Bailey’s (Chicago, Ill., USA) idea that consciousness is most profoundly disturbed by lesions of the brain stem between the “hypothalamus and bulb” met with the approval of most of the neurosurgeons. It is a well-known finding that alterations in the conscious state can be produced by stimulation of the medial and inferior areas of the human frontal and temporal lobes. An extension of these studies indicates that “arousal” can be produced by stimulation in many of the thalamic nuclei as well as in the external portions of the globus pallidus. Wilder Penfield’s (Montreal, Canada) statement that the support of consciousness depends upon a constant flow of impulses from the higher brain stem to the cortex and back, was nicely illustrated by the presentation of P. Solomon et al. (Boston, Mass., USA). These investigators exposed human subjects to “sensory isolation” in a tank-type respirator for 24 to 72 hours. Some of the subjects, after being deprived of external stimulation, exhibited alterations in the conscious state and became disoriented, confused and had hallucinations.

Studies of deeply comatose patients by M. Nathanson et al. (New York, N.Y., USA) showed that the absence of oculocephalic and caloric responses is not specific for lesions of the brain stem as these reflexes are also absent in other conditions that give rise to coma. Acting upon his interesting theory that the choroid plexus is a “dangerous organ” in the presence of increased intracranial pressure, F. A. Verbeck (Groningen, Holland) performed 106 choroid plexectomies which improved the state of consciousness of 88 of the patients so treated.

Sixteen cases of unconsciousness following vertebral angiography were studied electroencephalographically by A. Lundervold (Oslo, Norway). The patients that demonstrated filling of the posterior cerebral arteries had theta and delta waves by electroencephalography. Some of these also had a homonymous hemianopia. Congenital anomalies of the vertebral and basilar arterial systems occurred in a fairly large percentage of these patients. He conjectured that damage to the structures supplied by small pontine arteries was responsible for the alterations of consciousness. He did not state how long or profoundly consciousness was altered.