MUSCLE TONICITY, EMOTIONAL EXPRESSION AND THE CEREBRAL TONECTIC APPARATUS

By Charles K. Mills, M.D.

Dr. Mills first said that since he had sent the announcement of his paper to the secretary some month or two before the meeting he had changed the title in the course of the development of the article. At first this title referred primarily to one of the most dramatic symptoms exhibited by the patient—involuntary painful emotional expression—but his further studies of the case and of the literature of the subject had caused him to expand the scope of his paper for presentation and publication. One of the fundamental ideas in this paper was that of the existence of a special cerebral tonectic apparatus. This on its motor side is extra-pyramidal. He held in his paper that tone derived from sensation and idea has in the cerebral cortex a special rendezvous. He believed that this was largely midfrontal and prefrontal and more highly developed in the right cerebral hemisphere.

Motor centers of the cortex cephalad of the central fissure had cellular tonectic annexes which together composed a tonectic or tonecto-motor zone. By association tracts this tonectic area was connected with the striatum so that its impulses here grouped could be delivered from the strio-thalamic system en masse by way of the cerebello-rubrothalamo-cortical system on the pyramidal motor apparatus. In this way the tone necessary to the steadying of synergic motor activity was acquired for normal movement. When this rhythmic tonectic influence was withdrawn—by large lesions of both lenticular nuclei for instance—the cortical tonectic centers released from their striate connections discharged directly by gyral associating tracts on the cortical motor centers and thus arose the phenomena of hypertonicity, or perhaps it might be better to say of irregular tonicity.

Dr. Mills believed that the caudatum was more especially concerned with the tonectic phenomena of the autonomic or sympathetic nervous system and that its influence was exerted by way of the nucleus ruber and the cerebello-rubro-spinal tract.

The paper contained numerous observations on a case of bilateral caudato-lenticular degeneration or destruction with a microscopic study by Dr. Spiller of the secondary degenerations resulting. In the first place, the patient exhibited to a very large extent the symptom-complex of Kinnier Wilson's bilateral lenticular degeneration—involuntary emotional expression, hypertonicity, tremor, involuntary movements, contracture attitudes, dysarthria, dysphagia, some mental reduction and, late in the case, rigidity. Sensory symptoms were entirely absent. While the deep and superficial reflexes were very prompt, the Babinski extensor phenomenon was not present on either side.

In addition to this lenticular syndrome the patient exhibited vasomotor phenomena especially showing themselves in a congested appearance of the face. The temperature ran for months a degree or so below the normal, and respiration and pulse were in excess of normal rates. There was some irregular or peculiar impairment of control of the bladder and bowels.

Besides the symptoms just enumerated the patient had a few others of pyramidal type, the necropsy and pathological examinations showing limited involvement of the posterior limb of the internal capsule.

Dr. Mills discussed to some extent the literature of the subject of muscle tonicity and emotional expression and called attention to the records of some cases of large lesions of the midfrontal and prefrontal areas of one or both hemispheres in which phenomena somewhat similar to those produced by large striate lesions were present.

He held that tone as exhibited in man was a cerebral cortical function and that the three great elements represented in normal and abnormal movement were energy derived through the pyramidal apparatus, synergy from the cerebellum, and tone through the cerebral tonectic apparatus.

Dr. E. M. Williams said he had recorded a case of paresis, in his paper at this meeting, in which there was an incomplete left hemiplegia clearing up in the course of the day, the right side then becoming affected and clearing up with a later involvement of the left side. In addition there were generalized myoclonic twitchings, on the third day beginning to affect the face so that the facial muscles on the left jerked two or three times per second. During periods of about a half to two minutes what seemed to be outbursts of laughter occurred and during these the patient made peculiar grunting sounds.

The patient died and Dr. Williams could not get a necropsy. He thought it interesting as possibly further affirming the James-Lange theory of the dependence of emotion upon the motor stimulation. Whether the emotional outbreaks were primary in this case or secondary to the facial movements could not be decided.

THE IMPORTANCE OF THE BONY SINUSES ACCESSORY TO THE NOSE IN THE EXPLANATION OF PAIN IN THE HEAD, FACE AND NECK

By M. A. Bliss, M.D.

Not infrequently are pains in the face, head and neck treated for long periods with various internal remedies when the explanation lies in the accessory sinuses, and the ganglia and nerve trunks adjacent thereto.

A rather clear symptom complex springs from the district of the sphenopalatine ganglion, and alcohol injected therein cures it.

Incessant nuchal pain springs from the post ethmoidal sphenoidal district. Pronounced headache, dizziness, nausea and optic swelling arise also from this field. Cases illustrating these statements will be cited.

The ordinary casual examination of the nasal district does not suffice in this work.

The rhinologist must make numerous and painstaking examinations before the field under consideration may be excluded.

Dr. Hecht said this paper calls attention to manifestations which are too frequently accepted by physicians and neurologists as well, as expressions of a neurosis. This point of view, he thought, arises from the fact that the chief complaint—that of pain—is so long protracted, troublesome and resistant to treatment. In cases, for instance, of supraorbital neuralgia associated with frontal sinus infection, where all traces of pus have disappeared, the mucosa continues to present a chronic inflammatory appearance and the neuralgia continues in the presence of this slight evidence of pathology. In short, the presence of pus is not necessary to the inference of cause and effect. Neuralgias are readily superimposed upon pyogenic infections long after all traces of pus have disappeared.