NEUROLOGY

Abstracts.
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NEURO-ANATOMY AND NEUROPHYSIOLOGY.


In a study of the cerebral vessels of two stillborn fetuses and of twenty-four children, varying in age from birth to 14 years, it was observed for the first time that the size of the vessel determines the presence and the thickness of the elastic layer at birth and also the period of its most active growth. For the large vessels this period is the first three months, whereas for the smaller ones it is for the first five years, although the elastic layer continues to grow throughout childhood.

Splitting of the elastic layer into knotty areas of elastic fibres or lamellae and long slender cells is present at birth; it is found near the branching of the vessel. Three types of splitting were observed, varying in frequency and in type according to the individual rather than to age.

Retrogressive changes occur in these areas even in childhood, as calcification was found in the split elastic fibres in a child of seven years with an occipital abscess of four months' duration. In six cases, raised areas of split elastic fibres, connective tissue and long slender cells were observed for long distances in the intima without apparent relation to the branching of the vessel. However, the similarity of these six areas to the split elastic fibres before and at the branching of the vessel indicates that they represent a similar process of growth but that, probably owing to the influence of intoxication and inflammation, the splitting of the elastic layer has increased. R. M. S.


The authors studied the reflexes at the ankle joint in response to electrical stimulation of sensory nerves of the same or of the opposite limb. Spinal, decapitate and decerebrate cats were used.
ABSTRACTS

The response elicited was found to be ipsilateral flexion or extension or contralateral flexion or extension, depending on the neural balance between the spinal reflex centres, the nerve stimulated and the strength of the induction shocks. In chronic spinal cats, with the balance tipped to the flexor side, the usual response to moderately strong stimulation is bilateral flexion.

In decerebrate cats, with the balance tipped toward the extensor side, the usual response is ipsilateral flexion and contralateral extension. Not infrequently the two antagonistic muscles contract simultaneously during the stimulus. Reciprocal innervation can most easily be demonstrated when the extensor muscles are in tonic contraction. Under these conditions any flexor-producing stimulus, whether ipsilateral or contralateral, will cause extensor relaxation. It is maintained that the law of reciprocal innervation cannot properly be interpreted as excluding the possibility of simultaneous contraction. Both simultaneous contraction and reciprocal innervation occur and are essential for the proper functioning of the limbs in standing and walking.

Terminal rebound phenomena—rebound contraction after inhibition, rebound contraction after excitation, rebound relaxation after inhibition and rhythmic rebounds—are described and discussed. The type of reflex response elicited may sometimes be reversed from flexion to extension, or vice versa, by changing the strength or rate of the stimulus or by shifting the electrode from the tibial to the saphenous nerve, by changing the passive posture of the limb and in some other ways.

The significance of these phenomena for an understanding of the organisation of the spinal reflex centres is discussed.

R. M. S.


The introduction of the internal jugular method has made it possible to study the brain metabolism in a direct way, if it is combined, as in this study, with puncture of the carotid artery and, for comparison, with arm blood by a puncture of the brachial artery and basilic vein. This technique is perfectly safe. The specific gravity, sedimentation rate, urea nitrogen, non-protein nitrogen, phosphates, calcium, and chloride content of the blood in the jugular vein, carotid artery, brachial artery, and basilic vein are substantially the same. Sugar disappears in the transit between the carotid artery and the internal jugular vein in much the same way as in the transit between the brachial artery and the basilic vein. Oxygen disappears in the transit between the carotid artery and the internal jugular vein and CO content increases in the same transit. In four cases studied during anaesthetization it was found that the sugar content of the blood rose very decidedly. Before anaesthetization, however, there was a decided difference between the carotid sugar content and jugular sugar content. This difference tended to disappear during anaesthetization.

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