SIMPLE METHODS OF EXAMINATION IN PARAPLEGIA:

I. THE SPOON TEST

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INTRODUCTION

THIS communication presents a simple method of determining the sweating level in patients with spinal cord lesions which I have used over a number of years.

REVIEW OF LITERATURE

Detailed observations of sweating, including para- and tetraplegics, have been described in important contributions of the literature (Head & Riddoch, 1917; Riddoch, 1917-18; Guttmann & List, 1928; List & Pimenta, 1944; Cooper, Ferres & Guttmann, 1957; Roth, Trelle, Rushton & Elkins, 1959; Boshes & Bluestein, 1960). List and Peet (1937) classified sweating as 'thermoregulatory, emotional, drug, gustatory and spinal reflex'. To this one may add 'contact' sweating. Of these various types of sweating the 'thermoregulatory' or 'central' (List & Peet, 1937; Hyndman & Wolkin, 1941) and the 'reflex' sweating below the injury are most affected while the 'contact sweating' remains usually unchanged. Sweating tests are clincial methods which serve to evaluate the cutaneous sympathetic innervation.

It has been known that the autonomous supply varies a great deal in the area of each peripheral nerve (Guttmann, 1940) and that the sweat 'segments' are larger and overlap more than the dermatomes (List & Pimenta, 1944); the existence of segmental sweat distribution has even been denied to exist in the chest and upper extremity because of the great number of preganglionic fibres which enter the sympathetic trunk between T1 and T2 (Cox, Coldwater, Randall & Alexander, 1954). Within the spinal cord the sweat fibres are said to course in close proximity with the pyramidal tracts (Hyndman & Wolkin, 1941); generally, making allowance for numerous individual variations, sweat fibres are believed to ascend in the sympathetic chain above T6, to descend below T10, and to ascend and to descend between T6 and T10)Hyndman & Wolkin, 1941). The upper level of the autonomic outflow to the foot has been described to occur at L1, perhaps also at T11 and T12 (Cooper, Ferres & Guttmann, 1957).

Numerous tests have been devised to determine the sweating level which serves as a *pars pro toto* of efferent autonomic function. These methods have been enumerated by De Jong (1955, 1958) and they may be divided into two groups; (1) objective and (2) subjective methods.

1. To the objective methods belong those chemical procedures which stain the skin in the presence of moisture, and the measurement of the electrical skin resistance by neurodermometry.

The Starch iodine test (Minor, 1921; Guttmann & List, 1928; Guttmann, 1931), the quinizarine test (Guttmann, 1939-40), the ferric chloride-tannic acid test, and

the cobalt chloride test (Roth, Trelle, Rushton & Elkins, 1959) permit to record the test results by direct photography.

The neurodermometer is a sensitive instrument which does not only indicate skin moisture but also skin circulation; results must be plotted on a dermatome chart for permanent recording.

2. A subjective method is the palpation of the patient's skin with the fingertips (Spurling, 1953; Rooke & Corbin, 1955); moisture of the skin causes the palpating dry finger to feel a 'pull or 'hang' (Spurling, 1953). This latter test is expedient for a quick clinical assessment of the sweating level within the frame of a general neurologic examination. Obviously, the changeable dryness of the examiner's finger introduces an additional and ill-defined variable.

METHOD, RESULTS, DISCUSSION

The method presented here is a subjective test; it consists of using the convexity of a teaspoon, which is moved in a gliding and zigzagging fashion over the skin, permitting the weight of the spoon to be the only source of pressure. Whenever the spoon has been arrested by skin moisture, indicating the sweating level, it must be quickly dried before it is reapplied. The spoon has one obvious advantage over the examiner's finger; namely, that it produces no sweating of its own. Three steps of skin moisture (Boshes & Bluestein, 1960) can be detected with this test. They are zero, light and heavy sweating.

In 30 patients my results of the spoon test compared with those of another examiner and with findings obtained by neurodermometry.* These patients had cervical (14), thoracic (14) and lumbar (2) spinal cord lesions of exclusively traumatic aetiology. The neurodermometer used was Style No. 2R, Serial No. 2R1302, produced by the A. R. Spartana Company, Baltimore, Maryland, U.S.A.

In 29 out of the 30 patients the spoon test indicated skin moisture at least as accurately as the neurodermometer. The spoon test made it even possible to predict the excursion of the needle on the scale; light sweating correlated to an excursion up to 50 and heavy sweating to an excursion of more than 50, up to 100. Only in one of the 30 patients the spoon failed to pick up moisture on the forehead of a tetraplegic where the dermometer suggested it. For practical purposes, I should rely rather on the spoon test than on the neurodermometer, which is not without occasional imperfection. The spoon test serves a qualitative rather than an accurately quantitative purpose and has been accepted by others (R. W. Porter, 1963).

The spoon test neither presumes nor does it intend to compete with the objective colour tests. It simply permits to assess the level of the autonomic outflow during a clinical neurologic examination, much as a pin is used to test the level of analgesia.

Summary

The convexity of a teaspoon is used in order to determine the segmental level of skin moisture in patients with spinal cord lesions.

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RESUMÉ

La convexité d'une cuillère a été utilisée afin de déterminer le niveau ségmentaire de transpiration cutanée chez les malades avec des lésions de la moëlle épinière.

ZUSAMMENFASSUNG

Die konvexe Oberfläche eines Teelöffels kann für die Bestimmung des segmentären Schwitzens der Haut von Paraplegikern verwendet werden.

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