Electrical Transcutaneous Nerve Stimulation for Relief of Itch

Transcutaneous nerve stimulation (TNS) can relieve pain (SHEALY and MAURER[1]). Itch and pain are both neuroanatomically and neurophysiologically closely related sensory modalities. The therapeutic effect of TNS on itch was therefore tested on 17 patients with various disorders and with itch as a main complaint. Stimulation was given for 1 or 2 min via electrodes placed on normal skin in the midthoracic region of the back. A pulse generator delivered pulses of 0.2 msec duration at a frequency of 60 Hz. The intensity of stimulation was slowly increased usually up to a level just below the pain threshold.

In all the patients except three the itch disappeared during stimulation. This effect continued after the cessation of stimulation. Thus the previous sometimes long-standing itch was absent for various periods of time ranging from a few hours to 1 week.

It was notable that itching was abolished all over the body, although the electrodes were regularly placed only on the back of the patient. This effect diverges from our experience of TNS for control of pain where pain relief was obtained only when painful areas or nerves supplying these areas were stimulated. The generalized abolition of itch might imply that the benefical effect is not achieved solely by mechanisms working on segmental cord levels as was originally proposed in the case of pain control (MELZACK and WALL[2]). It seems more likely that the suppressing mechanism on itch works at supraspinal levels, i.e. the brain stem, thalamus or associated limbic structures. Some patients obtained relief from itch by subliminal stimulation. This suggests that the mechanism of action may occur without the participation of systems involved in conscious sensory perception.

Regardless of the possible mechanisms at work it is a fact that 14 out of 17 patients stated that they received indisputable and considerable alleviation of itch by TNS. This is of obvious clinical importance and there are certainly also neurophysiological implications.

Résumé. La stimulation électrique transcutanée a été employée pour des patients atteints de prurigo. Dans 17 cas de personnes traitées, 14 ont été délivrées de leur mal pendant des périodes qui varièrent de quelques heures à une semaine. La base neurophysiologique de cet effet n'est pas entièrement établie.

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Relationships between Age of Submission to Environmental Stress, and Monoamine Oxidase Activity in Rats

Chronic exposure of newborn-aggregated rats to auditory, visual, and motion stimulation ('environmental stress')[1] and of adult-isolated, nonfighting rats[2], affects monoamine oxidase (MAO) activity in several organs. Moreover, it induces a faster development of receptor sensitivity to 5-hydroxytryptamine in gastric smooth muscle of newborn rats[3]. According to the concept of age-related alterations in the physiological control mechanisms of mammals, a different responsiveness of MAO to stressors, might be expected in young and old rats. The purpose of the present study was, therefore, to evaluate if MAO activity of young-adult and old rats respond differently to a prolonged stress stimulation. Brain and liver MAO were assayed, as being easily affected by stressors[1,2].

Materials and methods. Male, Charles-River rats were used; young-adults were 7 weeks of age, old rats ranged from 12 to 18 months of age. The stress used in this study was obtained through combination of flashing lights, auditory stimulation and cage oscillations, in a

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Table I. Effects of 1 week-exposure to environmental stress, on monoamine oxidase[a] activity of brain and liver in young rats

Organ	Controls	Stressed	Recovery after 7 days
Brain	1046 ± 31.9 (16)	861 ± 24.6 (8)	1001 ± 58.6 (7)
	→	$P < 0.005$[b]	n.s.
Liver	754 ± 20.6 (16)	644 ± 20.0 (8)	781 ± 24.9 (7)
	→	$P < 0.005$	n.s.

[a] Enzyme activity is expressed as μg 4-hydroxyquinoline/g protein/30 min ± S.E. No. of determinations is given in brackets. [b] The levels of significance were assessed by the COCHRAN and COX *t*-test.