

Neural Therapy for the daily practice

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Definition

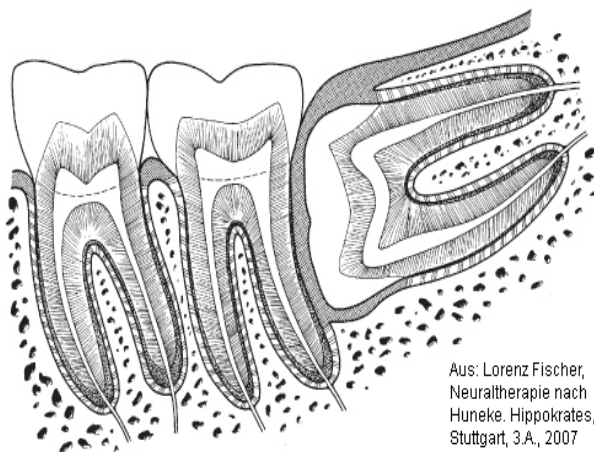
Neural therapy is a treatment that uses injections of local anesthetics for diagnosis and therapy. This treatment modality uses the auto-regulatory mechanisms and plastic properties of the nervous system. The generation of targeted stimuli (through the needle) and the selective extinction of other stimuli (through the local anesthetic) affect both the organization of the nervous system and the tissue perfusion, thereby disrupting positive feedback actions (vicious circle) in the pain cycle.

In pain process a vicious circle can be interrupted. The long-term effect, that has been proved by new studies, can be explained to a great extent by modern pain physiology.

Forms of neural therapy

- **Local therapy:** infiltration of trigger points, joints, tendons insertions, peripheral nerves.
- **Segmental therapy:** e.g. “quaddle-therapy” in the Head-zones, as well as vegetative ganglia, nerve roots and peripheral nerves.
- **Interference field therapy:** the interference field (Huneke, 1940) is a local, asymptomatic, chronic irritated area, e.g. a translocated or impacted wisdom tooth (image 1), apical osteitis, some scars. Impulses arising from the interference field

can trigger and maintain pain, inflammation and immunology disturbances.



An example: continuous impulses through impacted wisdom teeth can reach the area of the trigeminal nucleus. Its long Nucleus tractus spinalis reaches until the half of the cervical medulla. Via additional connections muscular tension and pain in neck or in any other region can be maintained. In case that local therapy in the cervical spine fails or even a counter-reaction takes place, we must take into

consideration an interference field (irritated area beyond that of segmental order).

Image 1: example of a possible interference field (irritated area) in the oral cavity: translocated and retained wisdom tooth. Fischer L. Neuraltherapie nach Huneke.3. Aufl. Stuttgart, Hippokrates, 2007.

Material

Procain 1% is the ideal local anesthetic due to its short half-life and good controllability. It is metabolized in tissues through pseudocholinesterase (not in the liver), therefore practically there are not interactions with other medications. So the treatment with procaine is a good option to treat polymedicated elderly people. Except for a possible allergy (rarely), practically there are not side effects. Procaine promotes microcirculation indirectly via sympatholysis and directly via its metabolites. Procaine also has an antiseptic effect and stabilizes cell membranes.

Alternative to procaine: lidocaine (it will be metabolized by the liver and it doesn't have a blood flow enhancing effect in itself).

Indications

- Functional, degenerative, inflammatory (in these cases as supportive therapy) disorders of the musculoskeletal system.
- Posttraumatic/postsurgical pain and functional loss.
- Headache and facial pain (migraine, tension headache, cluster headache, trigeminal and occipital neuralgia, chronic sinusitis).
- Circulatory disorders like Raynaud disease and diabetes, Meniere's disease, frostbite, CRPS (Sudeck's disease).
- "Chronic pelvic pain" (chronic cystitis, chronic prostatitis).
- Certain autoimmune diseases.
- Functional disorders of internal organs (e.g. irritable bowel syndrome, IBS).

Contraindications

Allergie to local anaesthetics (very rarely to procaine), coagulation disorders or anticoagulation, tendency toward vasovagal syncope, some somatoform pain disorders.

Neurophysiology

Nociceptive afferents from the skin, the musculoskeletal system or internal organs converge in the same dorsal horn of the spinal cord. The information from this area is then diverged (reflex answer) simultaneously to: via lateral horn of the spinal cord to the sympathetic nervous system, as well as via anterior horn to the musculoskeletal system and to the brain. So, for example, sympathetic and somatomotor nuclei will be simultaneously stimulated. Analogous to mathematical chaos theory these connections create a vicious circle (positive feedback, iteration) of pain (Fischer 1997 and 2003). The main mediator is the sympathetic system (image 2). This vicious circle is reinforced because under pathological conditions efferent (!) sympathetic nerves in

the periphery are able to rely to nociceptive afferents in a kind of short circuit, leading to a coupling between sympathetic and afferent neurons (Jänig 2006).

Nociceptive processes cause a reflex response (with or without pain) evoked by cutivisceral, viscerocutaneous, viscerosomatic motor, etc. reflex pathways. This reflex response, which is largely mediated by sympathetic nerves, involves changes in blood flow, increased skin turgor, hyperalgesia in localized areas of skin, dysregulation of the organ at the corresponding metameric level, as well as increased muscle tone, finding often trigger points. These changes in the projection areas can only be detected by the anamnesis and palpation (image 3).

Moreover, under pathological conditions the sympathetic nervous system can induce a neurogenic inflammation via vasodilation and plasma extravasation and the release of pro-inflammatory neuropeptides from its own nerve fibers (Cassuto 2006, review Jänig 2006). This inflammation decreases the response threshold of nociceptors and simultaneously recruits quiescent or “silent” nociceptors from the neighbourhood. Thus peripheral sensitization occurs, which reinforces the vicious circle even further. New synaptic connections are formed (neuroplasticity) and thereby pain memory. Now it is possible that, for example, touch or emotions can evoke pain.

Tracey describes an “inflammatory reflex” of the autonomic nervous system, reflexively adjusting the inflammatory and immune responses of the human body.

Already in 1924 Ricker was able to demonstrate in an animal model that even injuries to the sympathetic nervous system or pathological irritations which occurred a long time ago would be engrammatically stored. Every new (physiological) stimulus to such a system causes a pathological (excessive) response. It seems that the sympathetic nervous system has a kind of “memory” for pathological stimuli.

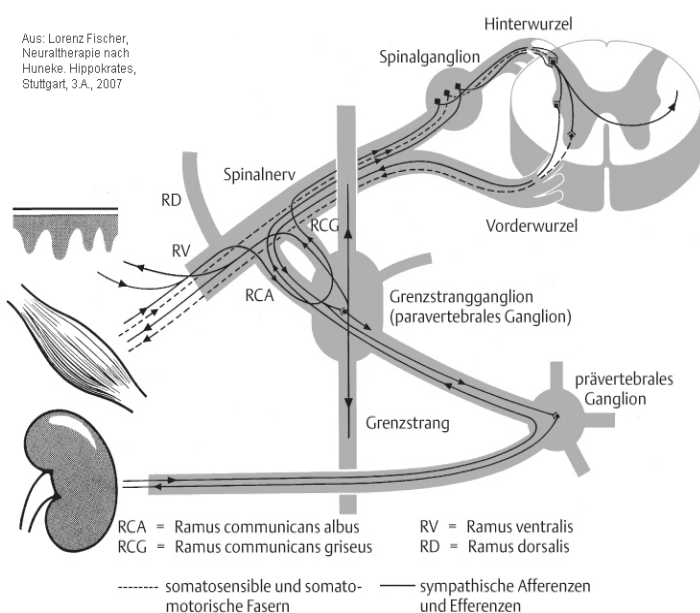


Image 2: Reflexory connections between skin, muscle and internal organ: a simplified schematic diagram. The arrows indicate possible sites of injection with local anesthetics. The injections can be combined: skin quaddle, injections in the muscles (trigger points), injections into spinal nerves, into para- and prevertebral ganglia. A long-term effect can be achieved through the interruption of the vicious circle. From: Fischer L. Neuraltherapie n. Huneke. 3. Aufl. Stuttgart, Hippokrates, 2007.

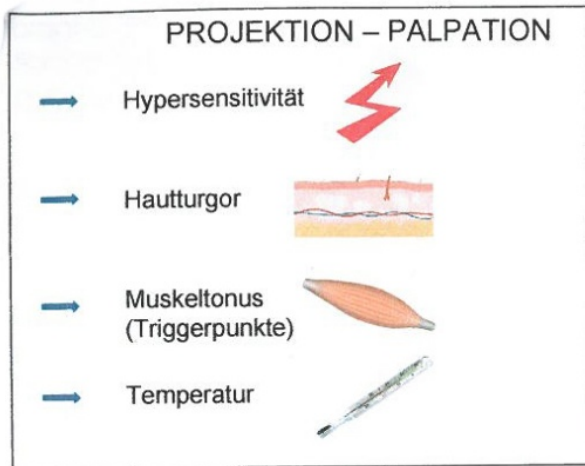


Image 3: The reflex response described in image 2 can be detected in the projection areas by palpation.

Logical use of the neural therapy

Using local anesthetics (neural therapy) these different levels can be accessed directly and logically: by applying an impulse (needle prick) and by disrupting a vicious circle (local anesthetic). Repeated application can lead to the “extinction” of the engrammatically stored pathological irritability of the sympathetic nervous system and to the restoration of normal tissue perfusion. In other words: the pain processing systems will be “desensitized”, thus it results in a favourable influence on pain memory. The temporary disruption of the sympathetic and somatic interrelated reflex arcs (image 2) can lead these systems to achieve auto-regulatorily their physiological balance. Moreover the sympathetic-afferent coupling can be reversed. The local anesthetic can disrupt the escalating vicious circle of nociceptor activity – sympathetic excitation – circulation disturbance – neurogenic inflammation – muscle hardening, etc. in different sites at the same time: for example, with infiltrations in myofascial trigger points (image 4), with “quaddles”, injections to vegetative ganglia (image 5), injections to the perivascular sympathetic nervous system.



Moreover, Cassuto 2006 was able to show that repeated application of local anesthetics can also directly reduce neurogenic inflammation. In addition, needle prick and local anesthetic can produce a favorable effect on the control of synaptic input to the neurons in the dorsal horn of the spinal cord (Melzack /Wall 1965).

Image 4: Trigger points in M. gluteus minimus (example) with possible reflected pain (pseudoradicular symptomatology). From: Fischer L. Neuraltherapie nach Huneke.3. Aufl. Stuttgart, Hippokrates, 2007.

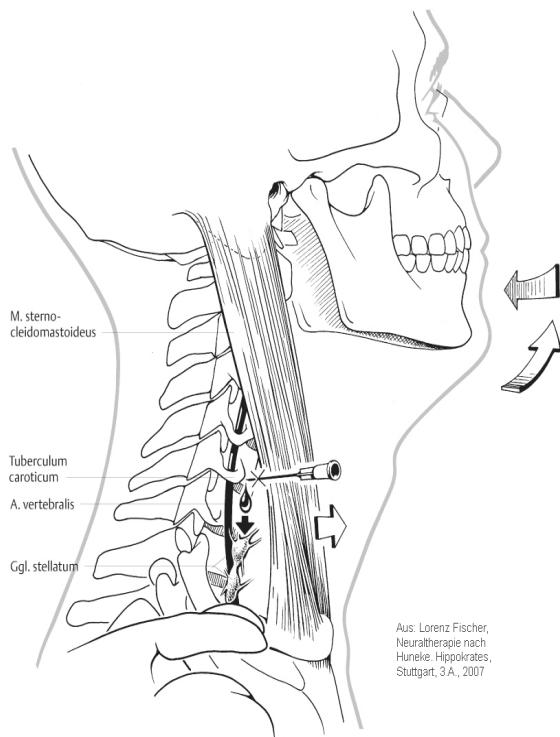


Image 5: Injection into stellate ganglion (example of a segmental therapy). From: Fischer L. Neuraltherapie nach Huneke.3. Aufl. Stuttgart, Hippokrates, 2007.

Practitioners

The local and segmental neural therapy is both diagnostically and therapeutically part of the daily practice in every pain clinic, of rheumatologists, also a part of the practice of general physicians, and it is called in Switzerland and in the anglosaxon countries diagnostic and therapeutic local anesthesia. This part of the neural therapy is considered conventional medicine and is covered by the basic health insurance. The so-called interference field therapy is considered complementary medicine.

Research

In research field we pay close attention to mechanisms of action. Furthermore, comparative studies on the effectiveness and efficiency have been carried out.

So we could follow the course of musculoskeletal disorders, which either received conventional treatment or neural therapy (<http://www.biomedcentral.com/1472-6882/8/33>). Significantly better results were achieved in the neural therapy group, among others, less certificates of incapacity for work had to be attested.

In other studies the positive long effect of the neural therapy on patients with chronic pain condition resistant to treatment was documented.

In a cost-effectiveness analysis primary care providers offering integrative neural therapy were compared to those providing conventional medicine alone. Both total costs and medication costs (average costs per year per patient) were significantly lower in the neural therapy group, though slightly higher consultation costs due to the injections.

Summary for the practice

- The simple neural therapy (quaddle, trigger point, tendon insertions, etc.) can be integrated both for diagnostic and treatment in the general practice.
- An accurate manual examination of the reflex arcs projection areas (neurophysiology) is a requirement for a successful neural therapy.
- Thereby often expensive medical tests (MRI, etc.) can be avoided, e.g. when lumbar back pain with the help of sacroiliac joint or trigger points infiltrations is identified as pseudoradicular.
- The diagnosis and treatment of interference field can be performed in the treatment -resistant conditions.
- Complex pain conditions must be managed with a holistic approach.

Text books

- Barop H: Lehrbuch und Atlas der Neuraltherapie nach Huneke. Stuttgart, Hippokrates 1996.
- Fischer L: Neuraltherapie n. Huneke. 3. Aufl. Stuttgart, Hippokrates, 2007. (New: Kurs- und Praxisbuch Neuraltherapie. Neurophysiologie, Injektionstechnik, Umsetzung in die Praxis. Komplet überarbeitete 4. Aufl. Stuttgart, MVS, 2013)
- Fischer L, Peuker E (Hrsg.): Lehrbuch Integrative Schmerztherapie. MSV Stuttgart, 2011
- Weinschenk S (Hrsg.): Handbuch der Neuraltherapie, Elsevier, München 2011

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