Neural Therapy

Part II: The Autonomic Nervous System and Its Relationship to Headache

Thomas Willis, the "father" of modern neurology, proposed the vascular theory of headache in 1672. He suggested that the source of pain was not the brain itself but nerve fibers being pulled by distended vessels[1] inside the brain.

Harold Wollf reported in 1930 on the autonomic nervous system *(ANS)* involvement in migraine headaches. He postulated, that the primary cause of migraine is vasoconstriction of the extracranial arteries in the early phases of the headache, followed by vasoconstriction with associated peripheral vasoconstriction in the vessels of the limbs.[2]

Other signs suggesting ANS involvement in headache include nausea, diarrhea,[3] constipation,[4] coldness in hands and feet, paroxysmal tachycardia,[5] chest pain,[6] variant angina,[7] paraesthesia and numbness of the skin and others. The vascular theory of migraine was the generally accepted working model until the cell receptor theory came along around 1970. In 1908 Nobel prize laureate Paul Ehrlich postulated the existence of cell receptors, whose interaction or contact with specific agents was a mechanism responsible for many illnesses.

Receptor biochemistry has today become the basis for most pharmacological approaches. A recent example is the development of the drug sumatriptan which attaches to the 5-HT1 receptor. Other receptors involved in headache include the alpha-2 receptors, u-opioid receptors and somatostatin receptors. Until today there are numerous theories on the neurophysiology of headache, none of which are completely proven.[7]

Anatomy

To understand the role of the ANS in headache, it is helpful to understand the anatomy.

The ANS serves at least 3 basic functions in the brain:

1. Innervation of the vascular smooth muscle of the "vascular tree" within the brain. A stress signal affecting the sympathetic nervous system will generally lead to vasoconstriction in the area of the brain supplied and governed by this branch of the sympathetics.
2. Transport of neuropeptides and informational substances travelling in the axons of the ANS to the nerve-terminals in the vascular endothelium. Several dozen substances travel via the ANS-axons to the endothelium and are here released into the bloodstream, causing both local and systemic effects. Serotonin, enkephalin, nitric oxide and the inflammatory peptides such as substance P, neurokinin A and calcitonin gene related peptide are thought to be involved in the genesis of migraine pain.
3. 80% of ANS fibers are thought to be sensory in nature and may be directly involved in pain perception. Sensory autonomic nerves are present in the cranial membranes *(dura, arachnoid, tentorium)*, in the connective tissue and in the walls of the larger blood and lymphatic vessels. The ANS is known to have a wind-up effect *(sensitizing effect)* on the wide dynamic range *(WDR)* cells in the spinal chord, which modulate the pain pathway. If pain originates for example in the trigeminal system, this message has to pass through the WDR cells. These cells are the "gate" postulated in the gate control theory by Melzack and Wall. Only if the gate is open, the pain signal arrives in the brain and is consciously perceived by the patient. Is the WDR-threshold lowered by arousal of the sympathetic nervous system in the same segment, the pain message passes through the WDR cell up into the brain. Arousal in the ANS can be caused by any excitatory stimulus acting on the axons, nerve endings or ganglia of the ANS. Abnormal electrical signals *("abnormal signaling")* may be arising from the jaw or dental area—for example from dysfunctional scars *(from tooth extractions or surgical procedures)* or from dysfunctional teeth *(decay, incompatible restoration materials, mechanical stress, toxi-city from filling materials and infections etc.)*. The dental pulp has its own autonomic nervous system comprised of both sympathetic and parasympathetic fibers traveling piggyback on the arteries, veins and lymphatic vessels into the jawbone and into the dental pulp. The sympathetic fibers are post-ganglionic and arise in the anterior cervical ganglia *(stellate, middle-and upper cervical sympathetic ganglia)* and travel to the teeth piggyback on the vessels and trigeminal nerve fibers. The meninges and arteries of the brain also have a rich parasympathetic innervation stemming mostly from both the sphenopalatine and otic ganglion. The sympathetic innervation of brain and meninges originates in the spinal chord at the levels T3 and T4. Any dysfunction in a tooth or related structure *(muscles of mastication, periosteum, dental ligaments, jaw joint capsule)* may cause arousal in the adjacent sympathetic or parasympathetic fibers, causing local or systemic electrical arousal or even chaos in the ANS, which in turn can result in the clinical picture of headache. This includes tension headache, cluster headache, TMJ/dental related headache, migraine headache, cervicogenic headaches, sinus headaches, tic douloreux or trigeminal neuralgia and others.

Treatment Options

Only 4 treatment systems have evolved, that consciously utilize the current understanding of the ANS involvement

in headache patients :

1. Acupuncture
2. Biofeedback
3. Neural Therapy
4. Myofascial trigger point injections *(trigger point therapy was part of the original German neural therapy teaching, but is known in the US as its own sub-specialty)*

Neural Therapy

Neural therapy is a treatment modality developed in Germany and Russia over the last 75 years and adresses dysfunction of the ANS in a targeted, specific and systematic way *(see also last issue of Explore! For the Professional)*. Other treatment modalities also work by modifying the ANS such as chiropractic therapy, cranio-sacral therapy, Osteopathic manipulative care, etc., but the health care providers are rarely aware of the ANS and are not utilizing the current physiological and anatomical knowledge base to optimize the outcome.

Health issues, that affect the ANS

Research has shown, that the ANS is commonly disturbed by a selected number of factors:

1. Membrane instability caused by nutritional and hormonal deficits *(i.e.: a number of nutrients, such as fatty acids, amino acids, minerals and vitamins are required for the daily nutrition of a nerve. Hormones such as DHEA and pregnenolone have a membrane stabilizing effect)*.
2. Food allergies.
3. Toxicity from metals, microbial neurotoxins and solvents. Mercury toxicity, for example, destroys GTP, the enzyme that makes tubulin, a major structural component of every nerve axon.
4. Emotional factors: unresolved psycho-emotional issues create chronic arousal of the ANS via the limbic-hypothalamic-ANS axis.
5. Occlusal problems: healthy proprioception has a suppressive effect on pain messages traveling through the WDR cells, poor proprioception facilitates pain signals. Poor occlusion also stimulates abnormal ANS signals in the ANS nerve endings in the involved structures.
6. Chronic infections *(especially in face and jaw)*: toxins from teeth are often neurotoxic-interfering with the healthy function of affected nerves and brain-structures.
7. Electromagnetic and other man-made biophysical stress: nerve conduction is the spreading of electric fields along the axons of nerves. Man-made electric and magnetic fields can interfere with that function, often leading to lasting dysfunction, even after the noxious input is removed.
8. The "interference field *(IF)*" or "focus."
   A focus is a group of cells, that is disturbing to the system. A focus most often causes problems away from the site of the focus. Therein lies the main problem: how to find it? ART has emerged as the most accurate, fast and cost-effective way to accomplish this *(see next column)*. A focus can be an area of chronic osteomyelitis in the jaw, from where bacteria exit and settle in other specific target sites in the body *(infectious focus)*. It can also be a group of cells, that has been injured *(through scalpel, trauma or illness)*. These cells can become electric impulse generators, creating small bursts of electric impulses, which travel within the ANS, causing problems often far away from the disturbed site *(electric focus)*. A focus can also be toxic or allergenic.
9. Structural problems from malignancies, trauma, bleeding, etc.

Diagnosis

The following diagnostic approaches have emerged in the last 30 years, that are able to assess dysfunction of the ANS and/or locate a focal area:

1. Heart rate variability testing: the basic technology involves taking a client's EKG and interpreting the variation of the R-R intervals. In a healthy and autonomically balanced organism the RR interval *(the distance between 2 consecutive heartbeats)* varies in a harmonious undulating pattern. In a unhealthy organism with blocked autonomic regulatory mechanisms the time between 2 consecutive heartbeats is exactly the same and does not vary. A computerized analysis of 192 consecutive heartbeats allows a qualitative and quantitative analysis of the ANS, since the tempo of the heart is regulated by a multitude of ANS functions *(sinus node innervation, blood pressure etc.)*.
2. Thermography: a heat sensing device is used to determine the skin surface temperature of the body which is regulated by the ANS. If a cold stressor is used, the skin temperature should diminish. If this does not occur, the ANS regulation in this area is disturbed.
3. Electrodermal screening *(EAV= Electroacupuncture according to Voll)*. This technique was first introduced by Reinhold Voll, MD in Germany in the late 1950s. He discovered, that in a client with a given medical condition the skin resistance in acupuncture points or densely innervated autonomic skin areas changes in predictable patterns. This can be measured with a simple Ohm-meter. He later discovered that the readings can be corrected when an effective and tolerated medication or healing substance is placed in the energy field of the client.
4. Autonomic response testing *(ART)*. This technique was developed by the author and has its roots in applied kinesiology *(Goodheart)*, clinical kinesiology *(Beardal)*, neural kinesiology *(Klinghardt and Williams)*, auricular Medicine *(Nogier and Bahr)*, EAV *(R.Voll, MD)*, Omura's bi-digital O-ring test and contemporary neurobiology. It is based in the current physiological and anatomical understanding of the ANS. The ANS is assessed with a complex arm length or muscle testing protocol. Then several diagnostic stressors are placed on a photo-amplifier in the vicinity of the client. The testing protocol is repeated and ANS stress is signaled to the examiner by changes in muscle strength or arm length. These changes are then interpreted and understood and translated into treatment strategies. This technique is easy to learn[9] and has become the most frequently used diagnostic ANS technique in Europe and many leading practices in North America. ART often enables the practitioner to detect

the headache causing focus within a few minutes, find the related dysfunctional ganglia, toxins, teeth and other problems with ease: non-invasively, elegantly and accurately.

5. Palpation/clinical exam

6. Chinese pulse diagnosis *(also VAS)*. The pulse is palpated in 6 different positions over each wrist. Each position represents a meridian or organ relationship. The qualities of the pulses *(hard, faint, shallow etc.)* are interpreted and related to illness conditions. The VAS is the vascular autonomic signal discovered by the French physician Nogier. If a stressor is placed in the clients energy field the apex of the wrist pulse moves distally.

Treatment

The treatment of the diagnosed autonomic dysfunction—which most often underlies the chronic headache—consists in an appropriate neural therapy intervention, which eliminates or treats the disturbance *(often in a single treatment)*.

Here is a list of common solutions, that have emerged in the European Neural Therapy context:

1. Cluster headache: the focus is usually a small area inside the nose,where the middle turbinate touches the nasal septum. Treatment is either injection of the area with normal saline or procaine or a series of sphenopalatine ganglion injections.

2. Migraine: the focus is usually a scar, which can be any where on the body. Gallbladder, hernia, hip surgery and appendix scars are most common. Treatment is injection of the scar with saline or procaine. Also food allergies are common. To test most common foods, the Coca pulse test is the most reliable and cost-effective method: establish your resting heart rate, eat the suspected food. If your rate increases by 4 beats/min. or more, avoid the food.

3. Cervicogenic headache *(common after whiplash injuries)*: the focal area is the superior cervical ganglion and the injured autonomic fibers in the upper cervical facet joint capsules. Treatment is a series of injections to the ganglion and proliferant *(such as P2G, which is a phenol, dextrose and glycerine mix)*.

4. Trigeminal neuralgia and atypical facial pain: the focus is usually a jaw bone infection or NICO lesion *(neuralgia-inducing cavitational osteonecrosis)*, which has to be detected and surgically eliminated.

5. Tension headache: the cause is usually psychological: a current life problem or an unresolved emotional childhood trauma, which has to be uncovered, reexamined and reprocessed. Conventional techniques such as counseling, hypnotherapy, EMDR,or more recent energy psychology techniques such as NET, psycho-kinesiology *(PK)* or applied psychoneurobiology (APN) are ideal.

6. Sinus headache: this type of headache is the great mimic: it can look and present like any of the other major types of headache, but also may present as severe neck pain or chronic fatigue. Treatment consists of treating a set of perivascular ANS points in the face or performing a series of sphenopalatine ganglion blocks. The Enderlein remedies are ideal for this purpose. New non-invasive techniques include the "sinus flush" in a reclining position with the use of the appropriate homeopathic remedies and the use of low level laser therapy or electric stimulation.

7. TMD/dental headache: Again, the pain syndromes caused by pathology of the oral cavity can present in many different ways, mimicking other types of headache. Treatment for a dental headache consists of:
   a) Diagnostic anesthesia of the affected tooth or jaw bone area, preferably using the intra-osseous neural therapy approach.
   b) Appropriate intervention *(removal of toxic fillings, tooth extraction, jaw bone curettage, etc.)*.

   This condition requires frequently the following additional procedures:
   a) Correcting the plane of occlusion and the shape of upper and lower arch.
   b) Elimination of trigger points.
   c) Stellate, Sphenopalatine, Otic ganglion and Vagus ganglion injections.

   Always consider unresolved emotional issues.

Results

The overall rate of eliminating even the most therapy resistant headaches with this approach is high. The most common side effects are unexpected improvements of other, seemingly unrelated conditions, such as permanent normalization of blood pressure, improved memory or eye sight, improved sleep and stamina, improved sexual function, etc.

Neural Therapy and Autonomic Response Testing are techniques with extremely high benefit/risk ratios and can be mastered by all licensed health care practitioners. ◆

LITERATURE

1 *Sacks,O.: Migraine - Understanding a Common Disorder. Berkeley University of Cal. Press, 1985:1-8, 228*
2 *Dalessio, D.J.: Wolff's Headache and other Head Pain. 4th ed.New York. Oxford Univ. Press, 1980*
3 *Selbyu,G. Observations on 500 cases of Migraine and Allied Vascular Headache. J.Neurol.Neurosurg.Psychiatry 1960, 23:23-32*
4 *Cady, R.:Treating the Headache Patient. Marcel Dekker, INC, New York 1995, pg.22*
5 *Thomas, WA: Paroxysmal Tachycardia in Migraine. JAMA 1925. 84:569-570*
6 *Briggs, JF: Precordial Migraine. isChest 1952. 21: 635-640*
7 *Miller, D.: Is Variant Angina the coronary Manifestation of a Generalized Vasospastic Disorder? New Engl J Med 1981. 304: 763-766*
8 *R.Cady: Treating the Headache Patient. Marcel Dekker, N.Y., 1995*
9 *Autonomic Response Testing: Dietrich Klinghardt, MD. Instructional videos, manuals and workshops. Tel: 425-462 2578*

Part I of this Series appeared in Volume 11, number 2, page 25.