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FIMM NEWS

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Content

15 th FIMM International Scientific Conference 2010	3
The Conference staff	4
The final Scientific Programme	5
The Programme of the Clinical Symposium	6
The Programme of the Poster Session.....	7
The Outline of the Conference	8
The Abstracts.....	9 - 23

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Fédération Internationale de Médecine Manuelle
International Federation for Manual/Musculoskeletal Medicine
Internationale Gesellschaft für Manuelle Medizin

DGMM
Deutsche Gesellschaft
für Manuelle Medizin e.V.



Final Announcement

15th FIMM International Scientific Conference 2010

In conjunction with the 4th Congress of DGMM

Hotel Seminaris, Potsdam, Germany

September 24–25, 2010

Biomechanics – Sensomotoric – Pain

Three sides of one coin?

Hosted by the International Federation for Manual / Musculoskeletal Medicine FIMM

In cooperation with the German Society for Manual Medicine DGMM



FIMM
Conference
Potsdam 2010

Organizer: International Federation for Manual/Musculoskeletal Medicine FIMM
In co-operation with the German Society for Manual Medicine DGMM

More Information: <http://fimm-online.com>



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Conference Structure

The Conference scientific programme will include plenary sessions in addition to special interest workshops. Major keynote sessions will be on Friday morning in conjunction with the German Congress. The programme will feature international Manual Medicine clinicians and researchers.

Conference Language

The official Conference language is English. Translations in German are not provided. The official language of the German Congress (September 24 – 26) at the same location is German.

Final Programme

Friday, September 24, 2010	
09:00 – 11:45	Programme presented by FIMM: (English) New Evidence in Biomechanics and Neurophysiology related to MM Medicine, Outcome of treatment protocols. FIMM KEYNOTES: <i>Prof. Dr. med. Paul Klein: Sacro-iliac joint – can we define the joint movements by the model of a single helicoidal axis?</i> <i>Prof. Dr. med. sci. Lars Arendt-Nielsen: Influence of the autonomous nervous system on sensory-motor reactions.</i> <i>Prof. Michael Kuchera, DO, FAAD: Manuel Techniques for pain relief using influence on NO.</i> <i>Dr. med. Jukka Pekka Kouri: Musculoskeletal pain management.</i>
14:00 – 19:00	Programme presented by DGMM in cooperation with FIMM: DGMM PRESENTATIONS and WORKSHOPS: (German) Biomechanics – Sensomotoric – Pain. FIMM WORKSHOPS: (English) Manual Techniques in Diagnostics and Therapy. <ol style="list-style-type: none"> 14:00 – 14:40 Stefan Martin – Atlas therapy in children. 14:50 – 15:30 Karl-August Lindgren – whiplash update. 15:30 – 16:00 Coffee-break 16:00 – 17:30 Kazuyoshi Sumita – Arthrokinematic Approach Hakata Method. 17:40 – 19:00 Michael Kuchera – Chronic low back pain: Managing Greenman's dirty half-dozen MM causes.
Saturday, September 25, 2010	
08:30 – 12:00	Programme presented by DGMM: (German) KEYNOTES: Biomechanics – Sensomotoric – Pain.
10:00 – 12:00	Programme presented by FIMM: (English) CLINICAL SYMPOSIUM A. <i>New evidences in functional tests and RCTs.</i>
12:30 – 17:00	Programme presented by FIMM: (English) CLINICAL SYMPOSIUM & RESEARCH POSTERS B. <i>12:30 – 1400 Poster Session.</i> C. <i>13:30 – 15:00 Miscellaneous (Note: Poster Session 12:30 – 14:00).</i> D. <i>15:00 – 17:00 Cervical spine – vascular approach.</i>

Saturday, September 25, 2010: Programme of the Clinical Symposium.

A. 10:00 – 12:00 New evidences in functional tests and RCTs

- a. KB Niemier et al. – Reliability of functional tests for stabilization & hypermobility
- b. H Locher, W Heymann – National guideline on Low Back Pain
- c. A Steinmetz – Sensorimotor alterations in Violinists with neck/shoulder pain
- d. W von Heymann – Prospective randomized clinical trial MT vs. NSAR vs. Placebo
- e. VN Galaguzo et al. – DD of neurologic evidence of muscle interscapular pain
- f. JY Maigne – Interexaminer reproducibility of examination of the neck in MM
- g. M Fischer – CMD and hip-abduction-test

B. 13:30 – 15:00 Miscellaneous

- a. M-J Teyssandier – The two functional spines
- b. SP Kanaev, SN Rasstrigin – MT in complex treatment of scalene-syndrome
- c. S Vulfsons – Language of chronic musculoskeletal pain
- d. JY Maigne – Searching the side of the pain without asking the patient
- e. S Hosono et al. – MM and microprocessor passive motion analysis, oscillation percussion therapy
- f. S Plesca – Manual treatment in chronic tension-type cervicogenic headache
- g. Ch Larsen – Introduction to Spiraldynamik® - intelligent movement

C. 15:00 – 17:00 Cervical spine – vascular approach

- a. AB Sitel, AJ Nefedov – Anatomy and physiology of vertebrobasilar systems
- b. AB Sitel, K Kusminov, MA Bakhtadze – Degenerative processes vertebrobasilar
- c. MA Bakhtadze – Cervicogenic headache by hypoperfusion of a. vertebralis
- d. IN Sharapov et al. – Ultrasound monitoring of acute cervical radiculopathy
- e. A Nefiodov – Cervical manipulation to prevent cerebral vascular insufficiency
- f. AI Nebogin et al. – Cervical-vestibular syndrome
- g. NA Krasnoyarova – Manual Therapy in vertebra-basilar insufficiency
- h. DA Bolotov – Autoimmune mechanisms of cervicogenic headache

Saturday, September 25, 2010: Poster Session.

A. 12:30 – 14:00

- a. LH Young et al. – The Effects of Lymphatic Pump on Nitric Oxide (NO) Release by Real-time Measurement in Lymphatic Thoracic Duct and Venous Blood and Nitrite Release in Venous Blood.
- b. PL Barnes et al. – A Comparative Study of Cervical Hysteresis Characteristics after Various Osteopathic Manipulative Treatment (OMT) Modalities.
- c. ML Kuchera et al. – Comparing Inter-Examiner Reliability Levels When Diagnosing Male & Female Innominate Dysfunctions Using a Hemi-Pelvis Compression Lateralization Test and Pelvic Landmark Levels.
- d. ML Kuchera et al. – Interexaminer Reliability of an Anterior Superior Iliac Spine Compression Test used to Lateralize Pelvic Somatic Dysfunction to the Right Side or Not.
- e. ML Kuchera et al. – Effect of Prior Anterior Superior Iliac Spine Compression Testing on Second Assessor Findings: Implications for Inter-Examiner Reliability Testing.

Outline of the Conference

15th FIMM International Scientific Conference September 2010

	Tuesday 21.09.10	Wednesday 22.09.10	Thursday 23.09.10	Friday 24.09.10	Saturday 25.09.10	Sunday 26.09.10	
09:00	FIMM Board Meetings	FIMM Board Meetings	FIMM General Assembly 2010	Neurophysiology Biomechanics Pain FIMM Keynotes English	Keynotes German	Workshops German	
09:30							
10:00							
10:30							
11:00					FIMM CS English		Keynotes German
11:30							
12:00		FIMM Poster Session					
12:30							
14:00		FIMM Executive Board Meeting		FIMM Workshops English Workshops / Presentations German	FIMM Clinical Symposium English Presentations German		
14:30							
15:00							
15:30							
16:00							
16:30							
17:00							
17:30							
18:00							
20:00		FIMM Get-Together	FIMM Dinner	Potsdam Event	DGMM Congress Dinner		
21:00							

Abstracts

In alphabetical order

Bakhtadze MA, Karalkin AV, Pasha SP, Tomashevskiy IO – RU-117571 Moscow – snn00@list.ru

Cervicogenic headache by hypoperfusion of a. vertebralis

Cerebral blood vessels receive efferent innervation from the cervical sympathetic ganglia. These ganglia, in their turn, are innervated by preganglionic sympathetic neurons, originating predominantly from the C8-Th5 segments of the spinal cord. Because sympathetic postganglionic neurons are motor neurons for the cerebral blood vessels, their irritation can cause vascular constriction, which can result in cerebral hypoperfusion.

Pain activates the sympathetic nervous system. An intervertebral disc or a spinal joint, if damaged, can also be a source of pain, for example in patients suffering from neck and upper thoracic pain. We hypothesize that cerebral perfusion could be decreased in such patients.

Aim: evaluation of cerebral perfusion in patients with chronic neck and upper thoracic pain.

Materials and methods: 45 patients (mean age 40 ± 10.9 ; male - 16; female - 29) were studied from February 2006 till February 2010, who suffered from neck and upper thoracic pain. All patients were included in the sample in the acute stage of the condition or during an exacerbation. Manual diagnostics revealed blockage in the suboccipital, cervical and upper thoracic motion segments in all patients. Pain provocation springing tests of the intervertebral and costovertebral joints were positive in patients of all groups (100%). Patients with arterial hypertension, arteriosclerosis, migraine, diabetes, craniocerebral injury, stroke in anamnesis and smoking subjects were excluded.

Division into 3 groups was made by using the Neck Disability Index (NDI). *Number of blocked motion segments in the cervical and upper thoracic spine and costovertebral joints was calculated in each group.* We estimated a joint as “blocked”, if passive motion in it was painful and restricted. Mean pain intensity, experienced by patients during manual diagnostic (pain provocation) tests was evaluated also using the 10-point Visual Analog Scale (VAS). Regional cerebral blood flow (rCBF) was evaluated with the ^{99m}Tc – HMPAO Single Photon Emission Computer Tomography (SPECT) of the brain.

Results: 14 patients (mean age 43.1 ± 7.6 ; male – 8; female - 6) were included into the 1st (mild symptoms) group. The percentage of disability in this group was 14.1 ± 6.9 according to NDI. Average number of blocked motion segments in cervical and upper thoracic spine was 1.07 ± 0.82 and 1.14 ± 0.66 respectively. Average number of blocked costo-vertebral joints was 1.21 ± 0.97 . Average pain intensity (VAS) was 5.09 ± 1.26 . Cerebral perfusion measured by SPECT was normal. 16 patients (mean average 36.3 ± 11.1 ; male – 5; female - 11) were included into the 2nd (moderate symptoms) group. The percentage of disability in this group was 39.6 ± 6.1 . Average number of blocked motion segments in the cervical and upper thoracic spine was 2.44 ± 1.32 and 2 ± 0.63 respectively. Average number of blocked costo-vertebral joints was 2.81 ± 1.60 . Average pain intensity was 6.58 ± 0.71 . In this group a decrease of cerebral perfusion was observed (range 20% to 35%), predominantly in the parieto-temporal and parieto-occipital zones. 15 patients (mean age 41.6 ± 12.7 ; male – 3; female - 12) were included in the 3rd (severe symptoms) group. The percentage of disability in this group was 56.4 ± 4 . Average number of blocked motion segments in cervical and upper thoracic spine was 3.0 ± 1.6 and 2.13 ± 0.91 respectively. Average number of blocked costo-vertebral joints was 2.6 ± 0.91 . Average pain intensity was 7.49 ± 0.8 . In this group the decrease of cerebral perfusion observed was from 30% to 45%, again predominantly in the parieto-temporal and parieto-occipital zones.

Student's *t* - test showed that the number of blocked motion spinal segments and costo-vertebral joints, being the source of pain, were higher in the 2nd and 3rd groups in comparison with the 1st group ($p < 0.001$). Pain intensity, observed on application of pain provocation tests were higher in the 2nd group in comparison with the 1st group ($p < 0.001$) and was the highest in the 3rd group in comparison with the 1st ($p < 0.001$) and the 2nd ($p = 0.002$) groups.

Conclusion: An impression is created, that cerebral hypoperfusion depends upon pain intensity and number of painful areas, arising from the motion segments of the spine and costo-vertebral joints. The mechanism for this effect would be through the sympathetic nervous system.

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A Comparative Study of Cervical Hysteresis Characteristics after Various Osteopathic Manipulative Treatment (OMT) Modalities

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Background: Despite apparent clinical benefits, few objective tissue texture measurements exist documenting post-OMT change. Spineliner® technology was used to analyze a portion of the cervical hysteresis curve; of four components used to calculate a durometer, motoricity (area under the curve) and fixation (tissue resistance) were analyzed before and after OMT. **Hypothesis:** Cervical tissues will show a quantifiable decrease in fixation and motoricity changes after OMT. **Materials & Methods:** 200 subjects were equally and randomly assigned to receive Sham or single-segmental Muscle Energy (ME), Counterstrain (CS), Balanced Ligamentous Tension (BLT), or High-Velocity Low-Amplitude (HVLA) OMT. After palpatory diagnosis for somatic dysfunction, subjects were objectively measured (Spineliner®), treated with cervical OMT, and then remeasured (Spineliner®). **Results:** Statistically significant or highly suggestive changes in motoricity (OA, C2-C5) and fixation (OA, C3, C5-6) were seen post-OMT. Regardless of treatment type, the most significant changes in fixation and motoricity occurred at C5. There was an overall trend suggesting that of these procedures, ME provides the greatest immediate improvement of hysteresis characteristics. While fixation immediately increased at C2 when using BLT, HVLA, or CS (in worsening order), it showed immediate improvement with ME. A suggestive motoricity trend was also observed at the level of the OA, inferring an improved treatment response was obtained with BLT, HVLA, CS, and ME (least to most responsive order). **Conclusion:** Comparing treated to untreated cervical spines, nearly all levels demonstrated immediate objective hysteresis change post-OMT. C5 showed the most change regardless of treatment type; ME provided the greatest immediate change.

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Autoimmune mechanisms of cervicogenic headache

The study was performed with 104 patients with cervicogenic headache (CH) (The control group consisted of 120 clinically healthy adult persons). The ELI-N-Test ELISA system was used to assay the sera of patients with CH for auto-Ab to S100β protein (a neurotrophic factor of serotonergic neurons), GFAP (glial fibrillar acidic protein, a component of intermediate filaments of astrocytes), MP-65 (a membrane protein of the integrin family), NGF (nerve growth factor), and BMP (basic myelin protein), as well as for corresponding AIAb that physiologically “counterbalance” auto-Ab of certain specificity.

Clinical examination of a patient, general assessment of his/her condition, and blood sampling for determining the level of auto-Ab were performed on the day of the first visit and after 12-14 and 30-35 days.

An analysis of serum samples revealed abnormal values of this index for one or several auto-Ab/AIAb pairs in 11% of clinically healthy persons, compared to 91% among patients with acute CH (22% of them had received medicamentous treatment) and 68% among patients with chronic CH (89% of them had received treatment without any noticeable result). A decrease in this index below the normal range was prognostically unfavorable: such a decrease was observed in patients with long history of the disease (more than 3-5 years) and could reflect a tendency toward chronic clinical symptoms in patients who began to suffer from headache not long ago. At this duration of CH, both the amplitude of fluctuations of immunoreactivity and the degree of disbalance in fluctuations of the levels of auto-Ab and AIAb (especially to S100β, NGF, and BMP) increase significantly, which may reflect increasing disbalance in the neurotransmitter (serotonin- and dopaminergic) metabolism.

The dynamics and degree of changes in the immunoreactivity of neurotropic auto-Ab in patients with CH differed not only from the physiological norm, but also in patients with different outcomes of the disease ($p < 0.05$). Thus, in cases when the effect of treatment (pain relief) was excellent or good, the immunoreactivity of neurotropic auto-Ab decreased by days 12-14 and returned to the norm by days 21-30, with the coefficient of immunoreactivity leveling off. When the effect of treatment was poor, the dynamics of neurotropic auto-Ab in blood serum had a different pattern ($p < 0.05$). In such patients, immunoreactivity with respect to all neurotropic auto-Ab often sharply fluctuated of amplitudes, with the idiotype-antiidiotype coefficient still increasing by day 30. In many cases (approximately 67% in chronic CH), immunoreactivity temporarily increased to 13-27 RU above the average level due to auto-Ab to BMP and corresponding AIAb. This could be regarded as evidence for induction of transitory demyelination in some patients.

Recovery of the upset idiotype-antiidiotype balance is a prerequisite for remission in different forms of CH. The results of this study show that, irrespective of the duration of the pain syndrome, the levels of auto-Ab to the test proteins and corresponding AIAb fall beyond the normal range. When the disease continues for more



than 1.5-3 years, fluctuating auto-Ab and AIAb levels deviate from the norm to even greater extent, which is evidence that the disease acquires a psychosomatic component. A correlation exists between the levels of auto-Ab to neural tissue proteins and corresponding AIAb, on the one hand, and the degree of depression, on the other hand: a decrease in these levels is accompanied by the prevailing activity of the parasympathetic nervous system, whereas an increased immunoreactivity correlates with a high activity of the sympathetic nervous system.

Objective data on the correlation of changes in immunological parameters and clinical manifestations of CH may provide a basis for wide use immunological methods for prognosis and monitoring of the state of patients with CH and for thorough revision of the tactics of their treatment.

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CMD and hip-abduction-test

Purpose: Studies have suggested an overlap between various chronic pain conditions and painful temporomandibular disorders (TMD). We therefore proposed to investigate the involvement of TMD in patients with complex regional pain syndrome (CRPS), using healthy subjects as controls.

Methods: Documentation of CRPS patients (N = 20) was established using the Research Diagnostic Criteria for CRPS, questionnaires, average pain intensity for the past 4 weeks and the Temporomandibular Index (TMI). Healthy subjects (N = 20, controls) also underwent the same testing. Hip range of motion (alpha angle) was measured at 3 time points: baseline (t1), following myofascial release of the temporomandibular joint (t2), and following jaw clenching for 90 seconds (t3). Comparison of the CRPS and control groups was made using t tests.

Results: Mean TMI total score and mean pain reported for the last 4 weeks were significantly different between the 2 groups ($p < .0005$). Hip range of motion at t1 was always slightly higher compared to t3, but t2 was always lower in value compared to t1 or t3 for both groups. The differences of all hip range of motion values between the groups were significant ($p < .0005$). Moreover, the difference between t1 or t3 and t2 was significantly different within the CRPS group (t1 = 48.7 degrees, t2 = 35.8 degrees, $p < .0005$).

Conclusions: The results suggest that TMJ dysfunction plays an important role in the restriction of hip motion experienced by patients with CRPS, which indicated a connectedness between these 2 regions of the body.

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DD of neurologic evidence of muscle interscapular pain

Objective: Investigating the role of spine cervical and thoracic regions, differential diagnostics and clinical features of cervicgia with interscapular area muscles pain syndrome.

The results of the research: The research has been performed on the basis of Manual medicine Centre of the Ministry of Health of the Russian Federation (Moscow, headed by Prof. Dr. A.B. Sitel), manual therapy, roentgenology, functional diagnostics divisions between 2005 and 2009. By overall sampling method, there have been chosen 50 patients (13 males and 37 females, the average age of $41.7 \pm 8,3$) in the acute period of disease. They complain of intensive one-side pain in the interscapular area, clearly connected with neck movements. They have made up the main group and were comparable both by age and by sex.

The control group consisted of 50 patients (18 males, 32 females, the average age of $40,8 \pm 9,3$), complaining of acute local pain in neck without irradiation in interscapular area and were all comparable both by age and sex.

On the cervical and thoracic region tomograms in direct projection, in case of all patients the thoracic scoliosis on the level of vertebrae DV, DVI, DVII was identified, as well as the secondary compensatory curve in cervical region, often on the level of vertebrae CV, CVI, CVII. On the roentgenogram of cervical region in the side projection in most patients' case the loss of cervical curve was discovered, in many cases – with tendency to kyphotic deformation, spinal stenosis, foraminal stenosis.

According to our observations, there is a correlation between the duration of the disease, a neck trauma in anamnesis, and the size of interscapular area protrusions.

The correlation with EMG data and the clinic of the disease allows to assert that the interscapular area injuries are accompanied with edema of epidural tissue and root sleeve, that leads to radiculopathy and muscles denervation. According to EMG data, the rhomboid muscle, getting innervation from roots CIV, CV, CVI, suffers in the first place.

Conclusions:

1. The presence of whip-lash trauma was identified in anamnesis of patients with neck pain and interscapular pain syndrome.
2. For the first time the properties of the clinical evidence of cervicalgia with interscapular pain syndrome, which is characterized by the fourth, the fifth, the sixth and the seventh roots of the interscapular area were identified.
3. Orthopedic and neurologic criteria have been supplemented to the differential diagnostics of reflectory and root forms of cervicalgia with interscapular pain syndrome depending on the level of cervical roots affection.

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MM and microprocessor passive motion analysis, oscillation percussion therapy

Objective: Dr. Yamasaki developed this technique to provide a science based, reproducible and objectifiable system to therapists who treat the locomotor apparatus in a non-invasive manner.

Method: The method considers a special approach to X-Ray taking and analyzing, digital measurement of skin temperature, combination of traditional manual techniques and the integration of these techniques into a computerized system of spinal passive motion analysis and oscillation percussion treatment of the spine, trigger points and acupuncture points, manual treatment plus rehabilitation training. This combination brings the benefits of a holistic diagnosis and a standardized, reproducible therapy, which is almost free of side effects such as injuries of spinal arteries.

Further benefits are the low physical workload for the therapist, the speed of treatment, the complete diagnosis, no infection danger due to the absence of needles, and the comprehensible documentation.

Results: Clinical empirical experience shows an increased ROM, lowered muscle tension in the painful and tensed regions and a reduction of pain. Due to the effective pain reduction and the comprehensible documentation patients are very compliant to additional therapies which are physical exercise and spinal gymnastics in the way of Prof. Tilscher.

Conclusion: This method is easy to learn for the therapist, safe, reproducible and objectifiable. Further studies are needed to prove the long-term effects.

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MT in complex treatment of scalene-syndrome

There were examined 150 patients with scalene-syndrome. Two groups of patients with concordant gender and age structure were formed.

In both groups were diagnosed functional blocks of atlanto-occipital (C0-C1) and cervico-thoracic (C7-Th1) segments.

The patients of group 1 (n=72) got local injection therapy. The patients of group 2 (n=78) got local injection therapy combined with manipulations on C0-C1 and C7-Th1 segments.

After the first injection group 1 showed 100% positive dynamics manifested as regression Doppler pattern with a reverse progression on the 2nd and 3rd day. Steady positive dynamics was seen after the 3rd injection. For group 2 steady positive dynamics was observed after the 2nd injection.

After the treatment functional blocks regression for group 1 amounted to C0-C1 5% (n=4) C7-Th1 7,7% (n=6) respectively. For group 2 functional blocks C0-C1 regressed for 86% (n=62), functional blocks C7-Th1 regressed for 80% (n=58).

In the course of 6 month (catamnestic/follow-up) monitoring group 1 showed 63% of backsets as opposed to 11% for group 2. The research revealed that for the group where both manual therapy and local injection therapy were applied backsets were registered 6 times as little ($p < 0,01$)

Conclusions:

4. Functional blocks of atlanto-occipital and cervico-thoracic segments are characteristic for scalene-syndrome.
5. Manual manipulative techniques on atlanto-occipital and cervico-thoracic segments reduce backsets of scalene-syndrome.
6. Manual manipulative techniques on atlanto-occipital and cervico-thoracic segments do not affect the time elapsing before jugulation for for scalene-syndrome treatment.

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Manual Therapy in vertebra-basilar insufficiency

The problem with vascular diseases of the brain is an important aspect of modern medicine. Cerebrovascular disease is a dominating feature amongst the causes of death, leads to decrease of ability to work and general overall patient disability. 30% of all cerebral crisis and 70% of transient ischemic attacks occur in the vertebro-basilar system. Reversible disorders of function of the brain are observed rather frequently, which are connected with blood supply insufficiency in the vertebro-basilar system. Vertebro-basilar insufficiency can occur broadly, in advanced age, middle age and also children. 65%-70% of potential causes are lesions of extra-cranial parts of vertebral arteries. Functional biomechanical disorders of cervical spine can act as the influential part in pathogenesis of these lesions.

These functional biomechanical disorders of cervical spine promote irritation of the periarterial sympathetic plexuses surrounding vertebral arteries that causes spasm, or vasomotor reactions, in distal arteries of the vertebro-basilar system. Musculo-tonic reactions in the form of pressure of the inferior oblique muscle of the head (anterior scalene muscle) causes patho-biomechanical disorders of the cervical spine, becoming the cause of the extra vascular compression of the vertebral artery at the C_I-C_{II} level, where the vertebral artery is outside of the canal in the vertebral transversal processes, or on the lowest neck level before the entry into the canal. Therefore, functional biomechanical disorders of the cervical spine can cause insufficiency of blood circulation in the vertebro-basilar region. This is shown clinically as headaches, dizziness and tinnitus, instability of movement, fatigability or tiredness, memory disturbance and emotional liability.

Manual therapy is the principal method of treatment directed to the correction of functional biomechanical disorders on the level of cervical spine. Functional biomechanical disorders on the cervical level may cause the progress of circulatory deficiency in vertebro-basilar system. Thus manual therapy directed to correct this is the preferred method of treatment in case of established vertebro-basilar insufficiency. The purpose of the present research was to study the role of functional biomechanical disorders on the cervical spine level in the pathogenesis of vertebro-basilar insufficiency. The purpose of the current research was pathogenetic substantiation of manual therapy as the prime method for treatment in case of cerebrovascular pathology.

During the period since 1990 till 2010, 516 patients with vertebro-basilar insufficiency were under clinical observation, totaling 345 women (66.9%) and 171 men (33.1%). The patient age structure was varied - from 14 till 65 years. The average age was 40 years. Clinical examination defined the initial manifestations of insufficiency of blood supply of a brain in the vertebro-basilar region. All patients had the complaints: headaches, dizziness, tinnitus, instability at movement, fatigability, memory decrease and emotional frustration. Neurological examination confirmed the signs of vestibular or vestibulo-cochlear syndrome, vegetative symptoms or symptom de Klein. The results of manual/physical diagnosis demonstrated functional biomechanical disorders at the cervical spine level. These functional biomechanical disorders led to a development of vasomotor changes in the vertebro-basilar system. This was accompanied with the corresponding clinical symptoms.

All patients were given a course of manual therapy, directed at the correction of these functional biomechanical disorders of the cervical spine. Techniques of muscular relaxation, mobilisation of the soft tissues and the osteoarticular structures on the cervical spine, procedures of post-isometric relaxation and musculo-energy techniques were applied.

Where indicated, manual therapy was combined with drug treatment, physiotherapy and acupuncture.

208 patients (40.3%) became much better after the treatment finishing and 308 patients (59.7%) improved. Our clinical neurological examination and manual diagnosis has demonstrated a good regression of patient symptoms. The neuropsychological research fulfilled in dynamics, EEG-researches, ultrasonic dopplerography of the brachyo-cepheral vessels were proven objectively improvement of the patients condition (slides with the results of this research before and after the treatment).

The comparative estimation of the results of application of the standard methods of treatment and results of treatment with application of manual therapy formed the real difference objectively using the Fisher's criteria transformed under Stearling's formula. Treatment with manual therapy was clinically the most effective procedure.

It is necessary to apply manual therapy promptly as and an effective method for the treatment of cases of vertebro-basilar insufficiency and for the correction of functional biomechanical disorders having the meaning of producing pathogenesis of this cerebrovascular pathology.

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Comparing Inter-Examiner Reliability Levels When Diagnosing Male & Female Innominate Dysfunctions Using a Hemi-Pelvis Compression Lateralization Test and Pelvic Landmark Levels

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Background: When diagnosing innominate somatic dysfunctions it may be relevant to recognize that structural, functional, and hormonal differences exist between male and female pelvises. The female pelvis is less massive, ilia are less sloped, and female hormones influence ligamentous tension. Despite these differences, few studies have analyzed gender effects on inter-examiner reliability when using palpatory diagnosis to diagnose innominate dysfunctions.

Hypotheses: (1) Examiners will exhibit less agreement when testing ASIS restriction in women; (2) female subjects will have a greater variety of innominate dysfunctional diagnoses; and (3) right anteriorly rotated innominate dysfunctions will be the most common diagnosis regardless of gender.

Methods: This is a blinded single cohort inter-reliability study. Two osteopathic students-in-training participated in training sessions; after 80% agreement, study conduction began. Examiners performed the ASIS compression test and visually assessed ASIS-PSIS heights bilaterally. The first 10 positive and 10 negative right compression tests registered by each evaluator were statistically analyzed consistent with a recommended inter-examiner reliability protocol (Fédération Internationale de Médecine Manuelle).

Results: 161 females and 169 males without low back pain were examined. A kappa=0.800 was determined for positive right ASIS compression tests in women compared to kappa=0.050 for males. In contradistinction to our first hypothesis, when assessing right innominate dysfunction, male subjects garnered lower agreement than females. Both examiners found similar higher prevalence of right anteriorly rotated innominate in females.

Conclusion: Examiners showed substantial agreement when diagnosing dysfunctional right ASIS in the female population. Poor agreement was found when determining the dysfunctional ASIS in males.

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Interexaminer Reliability of an Anterior Superior Iliac Spine Compression Test used to Lateralize Pelvic Somatic Dysfunction to the Right Side or Not

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Introduction: Osteopathic physicians use a number of palpatory structural examinations to diagnose pelvic somatic dysfunction (SD). They may elect to use the Anterior Superior Iliac Spine (ASIS) Compression Test to lateralize the dysfunctional side. Accurate, reliable tests are crucial to neuromusculoskeletal diagnosis and this study employs the kappa (κ) analysis protocol recommended for assessing interexaminer reliability of manual medicine tests (published by the Fédération Internationale de Médecine Manuelle [FIMM]).

Hypothesis: There will be a statistically “good” degree of reliability ($\kappa > 0.40$) using the ASIS compression test to lateralize pelvic dysfunction.

Methods: This is a blinded single cohort inter-reliability study. 330 healthy volunteers were recruited from Philadelphia College of Osteopathic Medicine’s student body and evaluated in succession by two DO/MS candidates. There were two phases to the study: an agreement period (standardizing exact performance and reporting criteria) and the testing phase. During the agreement period, examiners agreed to stand on the right side of each subject and to report the right ASIS compression test as “positive” or “negative”. During testing each examiner was blinded to the other’s diagnoses (reported to an independent recorder). Kappa (κ) values were calculated based on each examiner enrolling 20 subjects by their Compression Tests (10 positive and 10 negative each).

Results: With the 40 designated subjects using the FIMM protocol, an overall $\kappa = 0.425$ was obtained for the ASIS Compression test on the right.

Conclusion: In a healthy, non-back pain population, a right-sided ASIS Compression Test has good inter-examiner reliability for lateralization when performed and reported as agreed.



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Effect of Prior Anterior Superior Iliac Spine Compression Testing on Second Assessor Findings: Implications for Inter-Examiner Reliability Testing

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Introduction: Osteopathic physicians use palpation to diagnose SIJ somatic dysfunction (SD) -- including the Anterior Superior Iliac Spine (ASIS) Compression Test for dysfunctional side lateralization. (Literature suggests right-sided lateralization in 80% of asymptomatic individuals). Accurate, reliable tests are crucial however to diagnose SD and kappa (κ) analysis is a gold standard to determine the degree of interexaminer reliability for tests. Unfortunately, κ -values could be affected if palpation itself affects subsequent findings.

Hypothesis: Limited, gentle ASIS compression applications by one palpator will not affect prevalence of right-sided ASIS restriction seen by the second palpator.

Methods: There were two phases to the study -- an agreement phase (to standardize exact performance and reporting criteria) and testing. Palpators (two DO/MS candidates) agreed to stand on the subject's right side and alternatively doubly-compress each side two times. After 80% protocol agreement was met, 330 healthy volunteers were recruited and evaluated in random succession. During testing each palpator was blinded to the other's reporting right-sided ASIS compression positivity or not. κ -values calculated for this study were based upon each examiner designating 10 positive and 10 negative right lateralization tests.

Results: As first palpator, Examiner B diagnosed 79% right-lateralization (130/165) versus 67% for Examiner A (110/165), $p < 0.009$. Examiner A (first) compared to B revealed 72% versus 52% right lateralization, $p < 0.001$. κ -values for first palpator cohorts were both moderate ($\kappa_A = 0.55$, $\kappa_B = 0.30$).

Conclusion: Right-sided lateralization preference mirrored the prevalence cited in the literature for first palpators but was significantly reduced when following another's palpation.

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Introduction to Spiraldynamik® - intelligent movement

Introduction: Dr. Christian Larsen, MD, as the co-founder of Spiraldynamik®, has his own medical and course center in Zurich. He has personally trained more than 1.000 professionals in the fields of therapy, bodywork and movement education and published numerous scientific publications. Spiraldynamik® itself is an innovative and anatomically-founded therapy and movement concept. In short: An instruction manual for the own body.

Methodology: Spiraldynamik® is an anatomically based concept of human posture and movement coordination. A precise understanding of the whole kinetic system and its functions are key elements. Spiraldynamik® as a "three dimensional manual of the body" focuses on one of its principles of construction: at the anatomical level, e.g. in the architecture of the foot arches, the shape of the thigh bone, the crucial ligaments of the knee, the ligaments in the hip joint, the iliopsoas muscle – the spiral form is obvious. The therapy's main focus is the self-dependent optimization of the body position and movement habits in everyday life with special consideration of the individual constitution, the diagnose-specific pathomechanics and the common aims.

Results and Conclusion: This new approach helps to prevent orthopedic surgeries (in 2008, 179 patients cancelled their planned or advised surgeries), leads to cost reduction, long term rehabilitation through self-help and health promotion. The effects of following and using the principles of Spiraldynamik® are more economic movements with elegance, ease and higher presence. For the future Spiraldynamik® can be implied more and more in the conventional physical therapy.

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National guideline on Low Back Pain

The national guidelines for the treatment of the Low Back Pain are to be presented according to the results of the metaanalysis of all known studies about low back pain. The national German guidelines contain the definition of low back pain, the different origins today discussed to be responsible, and the economic impact of this problem. All diagnostic possibilities are presented: those, who are evidence based to be efficient as well as the evidence about non-efficient procedures. Finally the therapeutic options will be presented according to the level of evidence.

It will be very surprising that it is proven scientifically, that there is not a single disease, but just a state of pain perception deriving biological, psychological and/or social causes. Probably there are more subgroups than we take into consideration today. In addition the most important diagnostics are history and manual examination, not imaging. Finally the treatment is completely different to what has been used for many years – most important is to talk to the patient, second is to have a manual treatment or just simple analgesics. The results of the evidence based check of all we know about Low Back Pain is giving a broad impact to manual diagnostics and treatments.

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Interexaminer reproducibility of examination of the neck in MM

Objectives: To assess interexaminer agreement in a structured, manual, clinical examination of the neck. To correlate these data with the score in a functional questionnaire (a validated, French-language version of the Neck Pain and Disability Scale).

Patients: 59 ambulatory patients (26 males and 33 females, mean±SD age: 46.3±12 yrs) with common neck pain but no radiation below the elbow.

Methods: 2 medical practitioners (a junior and a senior consultant) assessed neck rotation (in degrees) and the presence of pain during maximum neck flexion and extension, muscle palpation (trapezius, levator scapulae, splenius cervicis, semispinalis) and cervical spine palpation. Cohen's kappa coefficient was calculated for qualitative variables. Angular rotational values (as a continuous variable) were compared using the p coefficient. Pearson coefficient was used to correlate the number of tender spots to the results of the questionnaire.

Results: There was no significant interexaminer difference ($\pm 10^\circ$) in the neck rotation measurement. Kappa was (i) 0.71 and 0.76 for pain in flexion or extension, respectively, (ii) 0.44 on average for palpation of various muscles and (iii) 0.53 on average for cervical spine palpation. The number of tender spots correlated strongly with the questionnaire score (Pearson's coefficient: 0.35; $p=0.007$).

Conclusion: The interexaminer agreement for our clinical examination was moderate. The number of tender spots correlated strongly with the functional impairment. Pain at the lower attachment of the levator scapulae was associated with dysfunction of the median or upper cervical spine.

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Searching the side of the pain without asking the patient

Objectives: In manual medicine, back pain is often attributed to tension in the back muscles, whatever the cause of this tension. When the pain is unilateral, it can be supposed that the tension is more pronounced on the painful side. We found therefore interesting to see if this tension could be detected by palpation only, i.e. if the examiner performed better than chance, which would lead to a result of 50% of good results.

Patients: 84 patients with unilateral low back pain (31 males and 53 females, mean±SD age: 45.9±15 yrs) were enrolled. The pain was right sided in 57% of the cases.

Methods: The patients were examined by the mean of palpation only on the spinal and gluteal muscles. The examiner was unaware of the side of the pain and patients were asked to remain passive and mute. The examiner should determine the side where the tension was the most marked.

Results: The correct side of the pain was found in 66.7% of the cases, a better percentage than chance (50%, $p=0.02$). The results were a little bit better for the right side than for the left (70.8% and 61.1% of good responses respectively).

Conclusion: Searching something else than provoked pain is a difficult task but can be considered as the proper of manual medicine. Our study brings evidence that changes in the soft tissues do exist.

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Atlas therapy in children

Arlen's Atlas Therapy differs radically from conventional chirotherapy in its application, goals and results. Atlas Therapy mainly affects the nervous centres responsible for regulating muscular tension, the autonomous nervous centers, the equilibrium and proprioception.

Contrary to classical chirotherapy there are no typical risks associated with Atlas Therapy, as it is performed without traction, rotation or extension of the cervical spine.

The muscles and fibrous tissue surrounding the first cervical vertebra have a high density of nerves. Through their sensors these nerves monitor and regulate the positioning of the body in space and help maintain the tension of muscles and tendons. They have a direct connection to the sense of equilibrium and to certain nervous centers responsible for the planning of motion and are also involved in the processing of pain reactions. The muscles and tendons of the upper cervical spine are thus a sensory organ which transmits information to the brain where it is then processed. Using Atlas Therapy it is possible to help correct this flawed flow of information and to improve the pathological condition.

Arlen's Atlas Therapy is performed using an exactly measured intensity from a predetermined direction for a very fast impulse which is applied upon the three dimensionally layered muscular system over the transverse process of the Atlas. An extremely short stimulation of the nerves of the area is achieved and a new pattern of perception develops in the brain. This method is especially suited for the treatment of asymmetrical muscle tone in infants and children and is combined with manual medical techniques that were developed for these age groups.

These techniques and Arlen's Atlas Therapy are presented in a hands-on workshop.

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Cervical-vestibular syndrome

The organization of cervical and cranial syndrome system can be based as on morphological as on functional changes and variety of its combination and ratio distortion of topographo-anatomic correlation. Morphological changes in itself make sensory and motor defects or take pathogenic effect to neural apparatus of paravertebral complex.

There is incomplete stored knowledge to separate clinical aspects of syndromes at the present time (morphological and functional changes and its combinations, especially with ratio distortion of topographo-anatomic correlation). They have vertebral nature by concurrent of clinical and nosological entity and confirmation of its genesis by hardware-instrumental methods.

The main purpose of this research was to detail developmental variation of cranio-cervical region diseases (including cranio-cervical junction) and detail reversibility degree of clinical implications with correlation of clinical and known nosological entity.

Ratio distortion of topographo-anatomic changes of structural elements (mainly bone) in cranio-cervical junction associated by innate evolution way damages and degenerate-dystrophic processes were excluded under discussion, because we hold these specific appearances are worthy separate consideration.

The 486 persons were separate into three groups according to criteria followed. The first group 388 contained had abnormalities of nervous system function which caused by prevailing of clinical significant functional biomechanical damages in the neck region. The second group contained 51 patients with I-II stages of cervical osteochondrosis. Third group contained 47 healthy persons.

The main cases of seeking medical advice by abnormalities of cranio-cervical injury:

1. vestibular abnormalities: dizziness – 50.5%; dystaxia abnormalities – 45.1%
2. hearing function changes – 26.8%
3. function changes of cranio-cerebral nervous of caudal group – 66.2%

The "cervical vestibular syndrome" unites diseases related to morphological, functional and topographo-anatomical changes in the cranio-cervical region. Therefore it will be more correctly to view the defined sympto-complex as separated cervico-vestibular syndrome.

By this way cervical vestibular syndrome can be separated as a self-determined element of nosological entity or as a part of higher-level syndrome or as a assident syndrome by other diseases. Beside this background all reversible biomechanical damages of cranio-cervical junction will be represent separated entity of cervical vestibular syndrome that requires a specific technique for treatment.

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Anatomy and physiology of vertebrobasilar systems

The anatomy of heart and arteries is those, that a stream of blood no turbulent, and no laminar, it is ordered rotating. In heart and vessels there are directing structures which form rotation of a stream of blood. Directing structures form a spiral. Muscular fibres of walls of arteries too form a spiral. Rotation of blood is provided with close interaction of nervous system and arterial muscles.

In apertures of cross shoots vertebral artery is fixed on thin connective tissue strings. Inside a bone ring the artery cannot be closed completely at angiospasm, in intervals between cervical vertebrae the artery can extend considerably. This feature interferes with a return current of blood.

Asymmetry stream of blood in vertebral arteries is caused by anatomic asymmetry. Gleam of left vertebral artery always is more than gleam right vertebral artery; such parity is observed in 75 % of cases. A parity of diameters of the basilar artery and vertebral arteries correspond to Gold section: 38\62.

General it is long ways of the blood which is taking place from heart through right vertebral artery always more, than through left vertebral artery, therefore right systolic quantum of blood comes to a place of merge later. In the basilar artery blood from vertebral arteries is poured in by turns.

Due to a tone of arteries and an anatomic structure of a place of merge vertebral arteries, streams of blood mix up in the special image; twist the friend for the friend, as molecules DNA.

The systole of a smaller artery, usually right, coincides with the beginning diastole a dominant artery; it gives special stability blood flow in the basilar artery and the brainstem arteries.

At normal anatomic and biomechanical position of neck-bone blood flow in vertebrobasilar system it is stable and can change as needed. At functional biomechanical infringements and at degenerate processes in a back-bone superficial vegetative textures of arteries are irritated, which results to infringement of management and dysfunction.

Vertebrobasilar insufficiency is a dissonance between volume of blood which the region can use, and volume of blood with which the regional arterial system can provide. Definition vertebrobasilar insufficiency of the WHO is incorrect.

Vertebrobasilar insufficiency can be regarded as a degree of functional indemnification: norm, compensation, sub compensation, decompensation.

- The norm is actively supported balance.
- Compensation is the intensive balance.
- Subcompensation is the unstable balance.
- Decompensation – is blood flow condition which results in a proof ischemia and irreversible changes of substance of a brain in a zone of blood supply.

At irritation vertebral arteries in the neck-bone channel, regulation of a tone of a vascular wall is broken, and reduction of blood flow in one of vertebral arteries, and later and to deformation of this artery. Compensation can exist very long time, while any process will not exhaust adaptable opportunities of system as a whole.

For example: Total blood flow on six cerebellum arteries, makes 30 % from all blood flow from vertebral arteries. If the person lies, the cerebellum consumes volume of blood necessary for maintenance of life and availability for service. Transition from position "lying" in position "sitting", trunks and finitenesses results to sharp gallop of consumption of volume of blood. If a gain necessary кровотока in borders of an opportunity of system there is indemnification if behind borders of an opportunity of system - that decompensation. The probability of development of clinical displays is maximal on border subcompensation or decompensation and depends only on intensity of influence of the external factor.

Vertebrobasilar insufficiency and pictures кровотока on data УЗДГ have shown research of clinical displays to insufficiency, that there is a close interrelation, between a degree of infringement of blood circulation in VBS and clinical displays.

Vertebrobasilar insufficiency has 4 stages, to each stage corresponds with dopplerography an equivalent.

There are some stages of restoration кровотока in vertebrobasilar system after realization of manipulation. Restoration blood flow is a process return to development of insufficiency.

After a rate of manipulation of an opportunity of adaptation vertebrobasilar systems considerably extend also she(it) passes from a condition of the intense balance (indemnification) in a condition of norm, or active balance. In our opinion maintenance of such condition vertebrobasilar вертебрально-базиллярной systems - a method of preventive maintenance of cerebral vascular accidents.

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Cervical manipulation to prevent cerebral vascular insufficiency

Cervical spine manipulations are an effective method of treatment of patients with vertebro-basilar insufficiency. It is known, that in case of degenerative processes in spine, for example as in case of osteochondrosis, anatomic and functional interaction of vertebra, vertebral impellent segments and different parts of a backbone is broken. Infringement of the biomechanics at a level of cervical part of backbone results in development of vertebral arteries dysfunction. Various degrees of expressiveness of this dysfunction take place. Ultrasonic dopplerography facilitates and accelerates statement of the diagnosis as reveals attributes, characteristic for each stage vertebro-basilar insufficiency. Cervical spine manipulations increases opportunities of adaptation and indemnification not only of vertebro-basilar system, but also all brain blood circulation. Increase of an opportunity of indemnification - preventive maintenance of insufficiency of vessels of a brain.

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Reliability of functional tests for stabilization & hypermobility

Introduction: Complex musculoskeletal dysfunctions are thought to be risk factors for the development and chronification of pain of the loco motor system. Problematic is the insufficient data on test reliability and validity on clinical tests for these dysfunctions.

Method: The intra- and inter-reliability of clinical tests for hypermobility and for the stabilisation system was examined in a multi centre trial. 68 patients in 6 centres were functionally examined by two examiners once and by one examiner twice.

Results: The tests for hypermobility showed good to very good results. The results for the deep stabilisation system were more variable. 23 tests showed a kappa-coefficient of greater than 0,5 and 15 tests good to very good reliability.

Discussion: All tests for the hypermobility and 23 tests stabilisation system are fit for further evaluation. The difficulties in learning of some of the tests might be one reason for the differences in the reliability. Therefore, dependent on the validity some tests will be rather useful in specialized centres, while others might be used as a screening of functional risk factors for pain chronification in primary care.

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Manual treatment in chronic tension-type cervicogenic headache

Objective: The aim of our study was the evaluation of tension type headache associated with pericranial tenderness which leads to static disturbances in the cervical column. Persistent functional disturbances in upper cervical column play an important role in the development of dystrophic changes and vertebral pain syndromes at this level.

Methods: This study comprised 93 patients (61 females and 32 males) with cervical pain syndromes caused by dystrophic changes in cervical vertebral segments. All patients had a past history of tension type headache with pericranial tenderness and had no other causes for cervical pain syndromes. All patients were examined clinically, manually, by X-ray and MRI exams. Spinal manipulation and post-isometric relaxation were performed for dysfunctional motion segments of the upper cervical spinal column to reduce musculotonic syndromes.

Results: Manual examination before the treatment revealed movement restrictions in C1-C2, C2-C3 segments caused by chronic pericranial tenderness and compensatory hypermobility in C3-C4, C4-C5, C5-C6 segments. X-ray and MRI examinations showed spondylolystesis "in stairs" in C1-C3 segments and degenerative dystrophic changes in cervical segments, presented by disc herniation, posterior osteofits and decreasing disc height. Applied manual techniques improved the mobility in the upper cervical segments and x-ray exam confirmed the decreased spondylolystesis.

Conclusions: Chronic tension type headache with pericranial tenderness may be considered a risk factor for the development of dystrophic changes in cervical segments and pain syndromes at this level. Spinal manipulation seems to be effective in the treatment of muscular tension phenomenon and in prevention of segmental motion dysfunctions.

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Ultrasound monitoring of acute cervical radiculopathy

Topicality of the cervical compression radiculopathy problem is substantiated by prevalence as well as complicated diagnostics and therapy of this pathology.

We examined 38 patients with the cervical compression radicular syndrome. 26 patients with reflex pain syndromes were examined as a comparison group. 20 patients without cervical pain in past history and at the moment of investigation composed a control group.

The investigation complex included clinico-neurological examination, ultrasound study of intervertebral disks of the cervical spine in B-mode and colour Doppler mapping in power Doppler mode.

Intervertebral disk hernias (55%) and protrusions (45%) are the main causes of development of acute cervical compression radicular syndromes.

It has been found when analyzing the data that in most cases the spinal root compression took place at the level of a relevant disk, and pain syndrome laterization always coincided with the side of the disk largest protrusion. Seldom cases when clinical findings of the root compression did not coincide with the level of a relevant disk could be caused by the formation of a descending hernia and epidural oedema at the subjacent level or by anatomically determined versions of innervations of the upper limbs.

In accordance with the ultrasonic study results disk protrusion sizes at the C5-C6 level were 3.12 ± 0.74 mm in case of compression radiculopathy, 2.24 ± 0.68 mm in case of reflex syndromes, and 0.54 ± 0.16 mm – in the control group, with significant differences among the values. Protrusion sizes at the C6-C7 level were 2.90 ± 0.54 mm in case of compression radiculopathy, 2.25 ± 0.56 mm in case of reflex syndromes, and 0.32 ± 0.12 mm – in the control group, with significant differences of the values.

Signs of the epidural blood flow termination were found in 24 patients with the root compression syndrome at the level of an affected intervertebral disk when we performed colour Doppler mapping in power Doppler mode. 16 patients also had signs of venous discirculation at the level of a subjacent intervertebral disk (an extended epidural oedema). The important pathogenetic factors of the root compression syndrome are epidural oedema and venous stasis in the epidural space, which accompany aseptic inflammation when the fibrous ring ruptures; it worsens the relative stenosis of the spinal and root canals and causes the compression of a spinal root.

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Degenerative processes vertebrobasilar

A study concerning the spondylogenic factor on haemodynamic in the vertebrobasilar system is presented. Two groups of patients with spondylogenic vertebrobasilar insufficiency and discirculatory encephalopathy (N=57) are surveyed. Complex tool diagnostics to all participants of research (ultrasound of the cervical intervertebral discs, MRI, X-Ray., duplex scanning of BCA & V, MR - angiography) were conducted. The 1st group (n=20) had spondylogenic disorder of one VA. To compare outcomes the second group was formed. The 2nd group (n=38) were patients with the VBI syndrome diagnosed in the background atherosclerotic stenosis one of the VA in V1 and V3 segments, limited by atherosclerotic discirculatory encephalopathy. A third group (n=21) had no symptoms at all.

Conclusions: The comparative analysis of patients' groups showed that symptoms of cervical and upper-thoracic dystrophic lesion in spondylogenic VBI cases follow the spine axis changes. Functional biomechanical disorders of the cervical spine are usually prior to the degenerative-dystrophic changes, but in the background of the IVD structural changes have already acquired, predisposition towards further functional failure increases.

As leading diagnostic ultrasound and MRI signs of the degenerative-dystrophic changes, we considered alteration of IVD signal intensiveness, IVD protrusions and herniations, thickness and calcination of the longitudinal ligaments. Among X-ray findings there were edge osseous spreading, subchondral sclerosis, thickness of the capsule-ligament apparatus of the intervertebral joints and joint facet deformations.

Presence of the spondylogenic VBI symptoms strongly correlated with the evidence of IVD height lowering at VMS CIII-CIV, CIV-CV levels. However, according to the data received, there is no any evidence of the degenerative-dystrophic change manifestation degree in the cervical IVDs on frequency of a VA pathological curve. It has been revealed that IVD and intervertebral joint alterations are at advantage in spondylogenic VBI cases, not deformations of the BCA.

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Sensorimotor alterations in Violinists with neck/shoulder pain

There is evidence that neck muscle dysfunction and impairments of the sensorimotor system is associated with neck and shoulder pain in the normal population. Nevertheless there is no research data at present to determine if these phenomena are present in musicians as well. The purpose of a recent research project in collaboration with the University of Queensland was to determine if these impairments are also present in violin/viola players and to investigate if fine motor control and dexterity are influenced by dysfunctions as such. This is important to know as impairments in dexterity associated with neck/shoulder pain is expected to have an impact on motor control in violin/viola playing and contribute to a decrease in performance excellence.

Within this study 22 violin/viola players with neck/shoulder pain, 21 without and 21 healthy non-musician as a normal control group were required to complete the Neck Disability Index, the General Health Questionnaire, the Patient Specific Functioning Scale and questions about their violin/viola playing.

Sensory testing included pressure algometry on the neck and over the M. tibialis anterior and thermal pain thresholds for cold and heat. Sensorimotor hand function was tested with the Human Performance Resources hand module BEP I recording reaction times, tapping velocity and performance accuracy.

Motor control was investigated with surface-electromyography of the upper, middle and lower trapeze muscle and the sternocleidomastoid muscle during the craniocervical neck flexion test, the tapping test and a violin/viola playing task.

Data analysis is currently performed, the aim of this presentation is to present the results of this study.

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The two functional spines

Results of the study in vivo in axial rotations of thoracic and lumbar vertebrae, in standing, sitting and walking subjects*.

Its intervertebral joints are subject to considerable mechanical horizontal shearing-twisting constraints. So, painful minor intervertebral dysfunctions are very frequent at this place and responsible of a true clinical syndrome that we named, in 1993, "mid- thoracic hinge syndrome"***.

The mid-thoracic hinge subdivides the whole spine in two functional subgroups**, situated upstream and downstream of this hinge.

It's a modern concept, confirmed by anatomy, physiology, physio-pathology, clinical examination, therapy, with practical consequences regarding:

- clinical examination of the spine,
- X-Rays examinations of the spine,
- therapy of subjects that suffer from common pains of vertebral origin***.

Practically: In case of cervical or cervico-thoracic pain: at least, clinical and X-Rays examinations of the cervical spine, the craniocervical hinge, the cervico-thoracic hinge, the thoracic spine upstream from T7, and the corresponding soft tissues.

In case of low back pain: at least, clinical and X-Rays examinations of the lumbar spine and pelvis, the thoracolumbar hinge, the thoracic spine downstream from T7, and the corresponding soft tissues.

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Prospective randomized clinical trial MT vs. NSAR vs. Placebo

The results of a prospective multicenter randomized controlled trial will be presented.

A group of up to nine specialists in Manual Medicine compared in a single-blinded controlled trial one type of manipulation in the lumbar spine in patients with acute low back pain with either NSAID-medication (Diclofenac) or placebo. They used in the non-manipulation patients a standardized sham-manipulation for the SIJ, respectively in the non-NSAID-patients placebo-medication. All three groups of patients received analgesic medication of Paracetamol for free use according to the pain level. All patients filled in a diary based on the Roland-Morris-Score, the SF 12 and the VAS for 8 days. Follow ups until 3 month are documented. The study fulfills the GCP criteria. The duration of pain and sick-leave were compared as well as the amount of analgesic medication.

The results of this first ever study to compare a defined manipulation versus NSAIDs versus Placebo including a defined manual sham-treatment will be presented the first time: there is a clinically relevant difference between the intervention-groups and the placebo-group, and within the intervention groups HVL-manipulation of the lumbar spine is significantly better than Diclofenac measured with the Roland-Morris-Score and SF12. In addition, in the manipulation-group the patients needed fewer analgesics and were earlier back to work. This result proves the importance of manual manipulative medicine.

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Language of chronic musculoskeletal pain

Patients understand their illnesses, disabilities and dysfunction in words. These words, the pain vocabulary, are abstract concepts that help us visualize and comprehend the disease process in our bodies. Thus a chronic back pain patient may have in his vocabulary the words such as: bulging disc, prolapsed disc, degenerative changes, spinal stenosis etc. He will therefore imagine degeneration of his spine and damage to his vital structures. It sound ominous, and he will look for solutions that will repair the damage. Interventional physicians and surgeons are happy to expand on these terminologies, thus leading to technical mechanistic “solutions” to a problem that is almost certainly not structural in nature but one of dysfunction.

Reviewing patients’ sources of medical information one finds that explanations and descriptions of chronic musculoskeletal pain are portrayed in structural damage terminology. The medical system, the media, family, friends and colleagues all utilize the same words over and over. This is reminiscent of using the proverbial golden hammer where everything looks like a nail. Even medical reports, especially imaging reports are clouded in structural medical terminologies. How can the layman think other than that he needs urgent interventional treatment such as discectomy, spinal fusion, radiofrequency ablation etc.

In this presentation, I will discuss in detail the neurolinguistic constructs that fashion our thinking, thus steering us towards invasive intervention, when conservative treatment will usually be better with less damage and cost. I will suggest a way to change the paradigm, an educational change that will change attitude and behaviour.

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The Effects of Lymphatic Pump on Nitric Oxide (NO) Release by Real-time Measurement in Lymphatic Thoracic Duct and Venous Blood and Nitrite Release in Venous Blood

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Background: The lymphatic pump (LP) osteopathic technique was chosen to generate nanomolar (nM) levels of NO from blood/lymph vessels in dogs. Previous LP clinical studies showed increased NO breakdown products (nitrite) in blood samples; however, LP effects on NO release have not been assessed by real-time measurement. A translational study was conducted to assess the relationship of real-time NO release in venous blood and lymph in dogs subjected to LP. Additionally, blood was collected to correlate [nitrite] with direct NO release measures. Hypothesis: LP in anesthetized dogs will increase NO/nitrite release in blood and lymph compared to baseline. Methods: NO microsensors (100µm diameter) directly measured NO release in the femoral vein and thoracic lymphatic duct of three anesthetized dogs (70-90lbs). Baseline NO was recorded (15min) followed by abdominal LP (4min); NO was continuously recorded up to 60min post-procedure. NO release (nM) was expressed as the relative change from baseline. Blood samples (2ml) collected during baseline, LP, and



up to 40min post-procedure provided [nitrite] determined via fluorometric reaction analysis.

Results: Real-time NO measures peaked within 4min of LP to 423nM (blood) and 337nM (lymph). NO release returned to near baseline values in blood (18nM) within 1min post-LP, but remained elevated in lymph (133-150nM) during the 60min post-LP. Plasma [nitrite] increased by 30nM during LP, but dropped to 4nM 5min post-procedure. Conclusion: Preliminary data show a trend that LP can increase NO/nitrite release in blood and lymph, and that increased NO release was sustained in thoracic duct lymphatic fluid – not in blood.

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