

The AAO

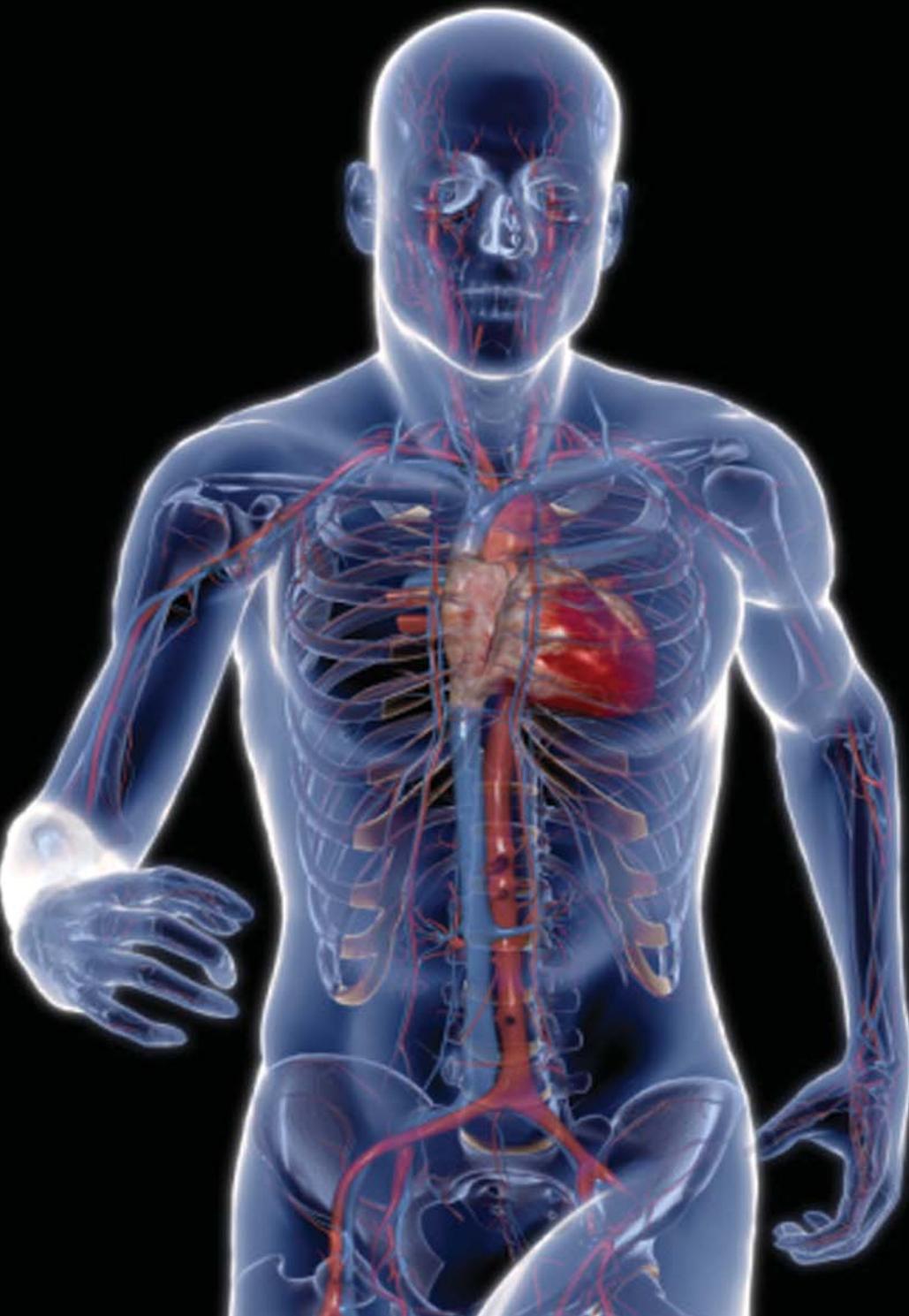
FORUM FOR OSTEOPATHIC THOUGHT

JOURNAL

Official Publication of the American Academy of Osteopathy®

TRADITION SHAPES THE FUTURE

VOLUME 19 NUMBER 3 SEPTEMBER 2009



**Human Volume
Tissue Investigation
Method**

Page 17...

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If you have any questions regarding membership or renewal of membership, please contact Susan Lightle, Director of Member Relations, at 317/879-1881 or slightle@academyofosteopathy.org.

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Correction to Fraix, M. Osteopathic manual medicine for vertigo: review of literature, case report, and future research. *AAOJ* 2009; 19(2):25-29.

The original article displayed incorrect numbering for the references.

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TRADITION SHAPES THE FUTURE . VOLUME 19 NUMBER 3 . SEPTEMBER 2009

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Classified	\$1.00 per word		

Contributors

D E Mokhov, MD; A V Chashchin, MD; N P Erofeev, MD; and D B Vcherashny, MD, have honored us by submitting their research study entitled “Human volume tissue investigation method.” In this study the authors use a system of registration and recording of the quasi-periodic processes in the human tissues. The research is based on detecting, measuring and recording the changes in different tissues reacting on variable degrees of cuff pressure occlusion. They are able to analyze various changes within the liquid systems as well as changes in micro- or macro-mobility of the tissues. The authors present experimental data from observation and measurement of the wave processes occurring in the human tissues with different constant levels of occlusion used. The spectral characteristics of the periodic volumetric changes in the tissues serve for the evaluation of the body’s functional state. They propose that this model can be used as a means of verification for the diagnostic and manipulative purposes in osteopathy.

Jerry Dickey, DO, FAAO, has submitted the text copy of his 2009 Scott Memorial Lecture, wherein he emphasizes the rights and responsibilities incumbent on all of us when we become osteopathic physicians. At the same time he both entertains and educates us by recalling some of the highlights of his illustrious career and journey through the world of osteopathic medicine.

Leslie Mae-Geen Ching, OMS IV, has written an interesting and thought-provoking essay entitled “There Are More Things in Heaven and Earth...”. This paper was the first prize winner in the AOA’s Bureau of Osteopathic History and Identity’s 2008 essay competition. The subjects of this essay are osteopathic education and osteopathic identity.

Murray R. Berkowitz, DO, MPH, C-NMM/OMM, our newly appointed Associate Editor, has contributed his article, “Application of Osteopathy in the Cranial Field to Successfully Treat Vertigo: A Case Series.” In addition to a discussion of his treatment approaches, the epidemiology of vertigo is reviewed and co-morbidities present in cases of vertigo are discussed. The association of vertigo with a not previously reported cranial dysfunction is presented. The need for further large-scale, multi-center research studies is reiterated.

Regular Features

“Dig On”

Jesus Sanchez, DO, presents an article entitled “Uncontrolled Asthma: Osteopathic Manipulative Treatment Applied in a Rural Setting.” He shares his experience showing that osteopathic modalities applied to asthmatic patients during an exacerbation allow for rapid resolution of symptoms, prior to and during the administration of any medication. The clinical experience gained from this case study has inspired him to develop a current research project on the efficacy of osteopathic manipulative treatment in the asthmatic population. This research has received IRB approval and is currently ongoing.

From the Archives

We again present a reading from the book *The Lengthening Shadow of Dr. Andrew Taylor Still*, by Arthur G. Hildreth, DO. This time it’s an excerpt from Chapter XVI, pp. 181-184, where he describes Dr. Still’s approach to evaluating patients.

Corrections

The following corrections should be made in the previous issue of the *AAOJ* (Volume 19, Issue 2, June 2009):

In the article “Scapular Glide: Functional relationships, dysfunction and treatment”, by Dan Kary, DO, FAAO: page 9, column 1, line 42: strike “inferior” and replace with “superior”; also in line 46, strike “also”.

In the article “An Osteopathic Approach to Management of a Patient with Charcot-Marie Tooth Syndrome Type II”, Stuart F. Williams, DO was inadvertently omitted as the faculty preceptor and co-author.

The *AAOJ* regrets the above errors.



View From the Pyramids Of Necessity and Change

Raymond J. Hruby

“It takes a lot of courage to release the familiar and seemingly secure, to embrace the new. But there is no real security in what is no longer meaningful. There is more security in the adventurous and exciting, for in movement there is life, and in change there is power.”

— Alan Cohen

With this issue we inaugurate two major changes in the *AAOJ*. The first change is that we proudly announce the addition of Murray Berkowitz, DO, MPH, in the newly appointed position of Assistant Editor. If you don't already know him, Dr. Berkowitz has written a special editorial for this issue where you can learn of his background and get to know him. He has also written an interesting case study, which you will also find elsewhere in this issue. We welcome Dr. Berkowitz to the *AAOJ* editorial team, and look forward to his contributions and to his assistance in keeping the *AAOJ* vibrant and growing.

The second major change involves switching the format of the *AAOJ* from hard copy to an online journal. To a large extent this change was brought on by necessity: the AAO Board of Trustees, at its recent meeting, made the decision to have the Journal changed from print format to online format. The economics of the time forced the Board to make some serious budgetary decisions in the interest of fiscal responsibility, and the change in the *AAOJ* format was one of these decisions.

Like any change we are concerned for what is good and also for what might be not-so-good about such a decision as this one. On the good side, we know that by going to an online format we are also “going green” with the *AAOJ*. Not only will there be a huge savings in publication costs, but we will also be saving trees, and generally decreasing our “carbon footprint” on the environment with this change. It is estimated that on an annual basis, printing and distribution of the *AAOJ* results in four tons of wood (equivalent of 27 trees), 49 million BTU's of net energy (equivalent to approximately one home per year); 11,133 lbs of CO2 equivalent of Greenhouse gases (equivalent to one car per year); 26,815 gallons of wastewater (equivalent to one swimming pool); and 3,947 pounds of solid waste (approximately one garbage truck load). (Source: Environmental Defense Fund)

The *AAOJ* will continue to serve as a peer-reviewed digital journal providing open access to scholarly and scientific osteopathic information. Individuals without access to view

the *AAOJ* in its electronic format may have a photocopy mailed to them. Please contact Jennifer Taylor at jtaylor@academyofosteopathy.org. if you wish to continue receiving a hard copy of the *AAOJ*.

I believe that readers will be impressed with the digital format of the Journal. The technology being used for the *AAOJ* will allow it to be presented in way that has the look and feel of a hard copy journal, even to the point of being able to turn pages. In addition, the digital format has other advantages. For example, you can jump to any part of the Journal quickly, quickly search for terms and phrases, and change font size for easier reading. You can also download a PDF file of the entire Journal for easy digital storage and future reference.

There are hundreds and hundreds of online journals already, so this is not a new phenomenon by any means, and the *AAOJ* is in good company. This also means that libraries and other institutions that subscribe to the *AAOJ* will be able to include it in their online reference databases, meaning that the information will be more readily available to osteopathic students and practitioners worldwide.

On the other side of the coin, we are concerned that all of our subscribers and AAO members will be informed of the change and will not be able to access the Journal easily. It may seem hard to believe in this age of information, but there may indeed be AAO members who do not have an Internet connection in order to be able to access the Journal. We will do our utmost best to inform everyone of the change and make sure they understand how to access the Journal online.

There may be other reasons why this change in *AAOJ* format may be difficult, at least in the beginning. For example, if you're the kind of person who likes to curl up in front of the fireplace and read, it might be hard to imagine doing that with an electronic journal. In hopes of shedding some humor on the situation, I can suggest that you get online and go to http://www.pbase.com/es839145/animated_fire where you can download a picture of a fireplace with an animated fire burning brightly. Put this on your computer screen along with the *AAOJ* and read away!

We know that change can seem difficult, even when we know it's for the good of all. We hope that you will embrace and enjoy the new *AAOJ* format, and we welcome your comments and suggestions.

AAO Calendar of Events

September 2009

September 12-13: AOA Bureau of Osteopathic Education, Chicago, IL

October 2009

October 8-10: Prolotherapy Weekend, Biddeford, ME

October 15-18: Manipulation Under Anesthesia, Davie, FL

October 21-24: Bone and Joint Decade Global Network Conference, JW Marriott in Washington, DC

October 29: AOA Program and Trainee Review Council (PTRC), Chicago, IL

October 30-31: AOA Council on Postdoctoral Training (COPT), Chicago, IL

October 31-November 1: Pre-AOA Convention Workshop: "Early Osteopathic Approaches to the Viscera", New Orleans, LA

November 2009

November 1-3: AAO Program at the AOA Convention, New Orleans, LA

November 1-5: AOA 2009 Convention, New Orleans, LA

November 1: AAO Board of Trustees Meeting, New Orleans, LA

November 2: LBORC meeting, 6:30 am (CST) in New Orleans, LA

November 2: Education Committee meeting, 6:30 am (CST) in New Orleans, LA

November 2: Fellowship Committee meeting, 12:00 noon (CST) in New Orleans, LA

November 3: PS&E Committee Meeting, 6:30 am (CST) in New Orleans, LA

November 3: Board of Trustees Strategic Planning Meeting in New Orleans, LA

November 21-22: AOBMM examinations, Indianapolis, IN

December 2009

December 5: AOA Bureau of Osteopathic Education, Chicago, IL

January 2010

January 22-24: Exercise Prescription, AZCOM in Glendale, AZ

January 29-30: Education Committee meeting, Indianapolis, IN

February 2010

February 3: PS&E Committee Teleconference at 6:00 pm (EST)

March 2010

March 14-16: Visceral Approach for the Sacrum and Pelvis, Colorado Springs, CO

March 15-16: Pelvic Pain: Mechanisms and Evidence Based Diagnosis & Treatment, Colorado Springs, CO

March 17-21: AAO Convocation, Pelvis & Sacrum: Where It All Comes Together, Colorado Springs, CO

March 18: PS&E Committee Meeting at 6:30 am (Mountain Time), Colorado Springs, CO

March 18: AAO Annual Business Meeting, Colorado Springs, CO

Classified

DIAPULSE FOR SALE: Office is closing soon and looking to sell Diapulse. If interested, call 734/848-5565.

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Editorial

Murray R. Berkowitz

I feel privileged and honored to be the inaugural Associate Editor for the *AAO Journal*. I see this Journal as a medium for educating and exchanging ideas. The word “doctor” comes from the Latin word “docere” meaning “to teach”. As an osteopathic physician and osteopathic medical educator, I see this as a natural extension of my professional practice of osteopathy.

Many of you know me, but more do not, so our Scientific Editor asked me to introduce myself. I was a soldier-airman, military aviator, parachutist, scientist, engineer, and educator prior to applying to medical school. I am privileged to have spent over seven years in the space program. I was over 40 years old when I heard the call to this different way of service. I am a disabled veteran who is honored to have served in both the Army and the Air Force, and still later as a military physician until I was medically discharged due to service-connected disabilities. I am board certified in NMM/OMM and am residency-trained in general preventive medicine and public health. I served as a Director of a three-county rural health district and have been in private practice. I am a previously published author and have consulted in occupational medicine, public health, and medical informatics.

We have several interesting articles in this issue. One is by an osteopathic medical student. She presents some interesting points. Although I do not personally agree with all of her points, I feel that our publishing this may spark some intellectual discussion and debate regarding the philosophy aspect of OPP that all too often gets less coverage in our very jam-packed

OMM courses and also seems to be absent from Convocation. I feel that she has made an excellent start on the road of life-long learning. Another is by colleagues in Russia. Not only is the science good, but it also shows the advances osteopathy has made worldwide. I hope we have the space to include the original Russian as part of this article. Another is by one of our osteopathic residents on applying OMT to treating uncontrolled asthma. Another excellent start on the road of life-long learning. I had been planning on writing a case series on vertigo when I received my June issue of the *AAOJ*. It contained the very excellent article by Dr. Marcel Fraix. The case series is a timely follow-on to his single case report and supports our mutual call for greater osteopathic research.

We were all told while in medical school that, as physicians, our need for learning will never cease. The periodical medical literature, whether print or electronic version, is one mechanism for continuing that goal of life-long learning. Together with our esteemed Scientific Editor, Raymond J. Hruby, DO, FAAO, I hope that you will actively contribute to this process of life-long learning by submitting original research, case reports or case series, commentary, or letters to the editors for publication. Only through this exchange of ideas can we continue to make advances in both the art and science of osteopathic medicine.

Murray R. Berkowitz, DO, MA, MS, MPH
Associate Editor

FACULTY POSITION NOVA SOUTHEASTERN UNIVERSITY COLLEGE OF OSTEOPATHIC MEDICINE DEPARTMENT OF OSTEOPATHIC PRINCIPLES AND PRACTICE

Nova Southeastern University College of Osteopathic Medicine (NSU-COM) is seeking an osteopathic physician for a full-time faculty appointment in its Department of Osteopathic Principles and Practice. The primary responsibilities of this position emphasize participation in the academic, research, clinical, and service programs of the department. In addition, the successful candidate must also demonstrate a strong background in patient care with emphasis on neuromusculoskeletal medicine. Prior teaching experience as well as strong communication and interpersonal skills are highly desirable. Board certification in family medicine or neuromusculoskeletal medicine or certification of special proficiency in osteopathic principles and practice is a requirement for this position. The candidate must also obtain a Florida license prior to beginning his or her employment.

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NSU-COM is currently ranked as the 11th largest medical school and the 4th largest osteopathic medical school in the nation. NSU is the largest independent not-for-profit institution of higher education in the Southeast and the 6th largest nationally. Additional information about NSU and the College of Osteopathic Medicine is available at <http://medicine.nova.edu>.

NSU is an Equal Opportunity/Affirmative Action Employer.



Prolotherapy Weekend

October 8-10, 2009 at UNECOM

Course Description:

Thursday, Oct 8: This will be required for those physicians who have not taken a prior course in prolotherapy. It will include an introduction to prolotherapy, wound healing, degenerative postural cascade, coding and billing.

Friday and Saturday, Oct 9-10: Participants will be divided into two groups, beginners and advanced. These two groups will alternate between lectures and anatomy and injection technique while the other group will be in the anatomy lab performing injections under supervision and reviewing prosections.

Presenting:

Mark S. Cantieri, DO, FAAO, Program Chairperson
George J. Pasquarello, DO, FAAO

Prerequisites

Functional Anatomy; (1) Level I course or equivalent

CME

The program anticipates being approved for 20 hours of AOA Category 1-A CME credit pending approval by the AOA CCME.

Program Time Table

Thursday, October 8..... 5:00 pm - 10:00 pm

Friday, October 9 8:00 am - 5:30 pm

Saturday, October 10..... 8:00 am - 5:30 pm

(Thursday includes a 30 minute break; Friday & Saturday include (2) 15 minute breaks and a (1) hour lunch.)

Course Location:

University of New England
Biddeford Campus
11 Hills Beach Road, Biddeford, ME 04005
(207) 283-0171
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<http://www.une.edu>

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* A rental car is recommended since the campus is located about 15-20 minutes from most hotels and restaurants.

Register Online at http://www.academyofosteopathy.org/upcoming_courses

**Registration Form
Prolotherapy Weekend
October 8-10, 2009**

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The AAO makes every attempt to provide snacks/meals that will meet the participant's needs, but we cannot guarantee to satisfy all requests.

Registration Rates

\$1,200 (if book has been previously purchased)

\$1,510 to include course syllabus:

Principles of Prolotherapy by Thomas Ravin, MD, Mark S. Cantieri, DO, FAAO and George J. Pasquarello, DO, FAAO

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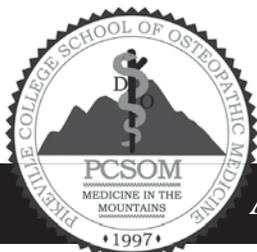
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Assistant Professor, Department of Osteopathic Principles and Practice

This is a full time position. Applicants should have experience in academic and clinical medicine, be a member of the AOA, board certified by an AOA certifying board (AOBSPOMM or AOBNMM preferred), have a current unrestricted medical license and physically capable of performing the duties. The successful candidate will be responsible for teaching OPP/OMT to osteopathic medical students in the classroom, laboratory and clinical settings. Faculty rank and salary are commensurate with experience. Candidates should submit a letter of interest, curriculum vitae and the names of three references to: Laura Griffin, D.O., FAAO, at 147 Sycamore St., Pikeville, Kentucky 41501 or by e-mail to lgriffin@pc.edu.

Dig On:

Uncontrolled Asthma: Osteopathic Manipulative Treatment Applied in a Rural Setting

Jesus Sanchez, Jr.

Asthma is a clinical entity with a constellation of symptoms that include wheezing, shortness of breath, chest tightness and cough.^{1, 2} Elucidated pathways have revealed components of inflammation and bronchospasm of the airways that lead to intermittent airway obstruction causing difficulties in breathing, and in severe cases, asphyxiation resulting in death.^{1, 3} Despite several experiments and numerous studies, asthma is not fully defined as of yet.

Exploring the natural history of asthma has raised awareness of the variability within the disease continuum.¹ Asthma commonly begins in infancy, as one study found, 5% of infants had at least one physician encounter for reported wheezing within the first year of life.⁴ The age range from infancy into adolescent years found asthma to be associated more with exposure to respiratory infections, such as Respiratory Syncytial Virus (RSV), and persistent symptoms of asthma occurring in those children with atopy.⁵ Asthma that is termed “allergic,” was found to develop most often during the second decade of life with some persistence into adulthood.¹

Epidemiology

It is estimated that asthma affects 5% of the population in the United States, accounting for approximately 4,500 deaths, 470,000 hospitalizations and two-million emergency department visits annually.¹ The Center for Disease Control and Prevention reports that the prevalence of asthma among children in the U.S. has increased from 3.6% in 1980 to 5.8% in 2003. Additionally, asthma was found to be the third leading cause of hospitalization of people under the age of 18 years, trailing only pneumonia and injuries.³

In 2002, the National Health Interview Survey by National Center for Health Statistics and CDC reported 30.8 million people having been diagnosed with asthma during their lifetime. Adults had a lifetime asthma diagnosis of 21.9 million compared to 8.9 million for children 0-17 years. Among all racial and ethnic groups, Puerto Ricans have the highest rate of lifetime asthma. Puerto Ricans were almost 80% more likely, and non-Hispanic blacks and American Indians were about 25% more likely to have ever been diagnosed with asthma than non-Hispanic whites. In adults, females were 7% more likely than males to be diagnosed with asthma, but among children males were more likely, than females to have an asthma diagnosis.⁷

Furthermore, children between the ages of 5 to 17 years missed 14.7 million school days due to asthma. The data also showed that there were 13.9 million outpatient and private physician visits, 1.9 million visits to the emergency department, 484,000 hospitalizations for asthma, and 4,261 deaths. Females had a 50% higher outpatient visit rate compared to males. Non-Hispanic blacks were most likely to die from asthma, and had an asthma death rate over 200% higher than non-Hispanic

whites and 160% higher than Hispanics.

Pathophysiology

Asthma as a disease has been characterized by intermittent airway obstruction, also termed reversible airway obstruction. It is proposed to consist primarily of two major components. The first component is bronchospasm or hyperresponsive bronchial smooth muscle, which is mediated through beta-adrenergic receptors and interleukin-13 (IL-13) that act directly on bronchial smooth muscle and epithelium to elicit hyperreactivity.¹ The second component is the inflammatory mechanism leading to edema of the airways. Two principal immune mechanisms linked to the inflammatory process involve the T helper cells, of which secrete multiple cytokines and interleukins, and the hypersensitivity pathway as mediated by IgE produced by the B cells, which leads to activation and degranulation of mast cells, basophils, eosinophils and other airway cells.² This in turn leads to the well-known process of histamine release and the subsequent inflammatory response.

Gross pathologic features consist of over inflation of the lung through a process known as “air-trapping,” especially in individuals who expire in status asthmaticus. Other features are the mucus plugs, composed of mucus, serum proteins, inflammatory cells and debris, occluding the medium and small-sized bronchi and bronchioles. In fact bronchiectasis has been described as a complication in 15 % to 20% of asthmatic patients. Microscopic pathologic features include both goblet cell hyperplasia and submucosal gland hypertrophy. One study reported that there may be up to a three-fold increase of both goblet and mucin cells in asthmatic patients vs. controls.⁶

Repetitive episodes of inflammation lead to a production of matrix proteins and growth factors that in turn can potentially cause airway remodeling. This may include the theory that frequent damage to the epithelium and subsequent repair also contribute to remodeling. It is also thought that remodeling, with increased muscle mass, mucosal edema and reduced elasticity, may lead to decreased efficacy of bronchodilators.¹

Anatomic considerations

There are key anatomic considerations when utilizing osteopathic manipulative treatment (OMT) in asthmatic patients. The thoracic cage houses some of the most important organs in the human body, namely the heart, lungs and great vessels. It is one of the most intricate and dynamic regions of human anatomy, with an orchestrated movement of over 146 joints.^{17, 18} Although asthma is considered a disease of the respiratory system, the osteopathic approach will evaluate the thoracic cage itself as well as the anatomic regions above and below the thorax. The thoracic inlet and thoracic vertebrae T1 are well documented as being transition zones between the cervicothoracic junction and the site of somatic dysfunctions

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via the concept of the facilitated segment. Specifically, viscerosomatic reflexes of the sympathetic nervous system have been identified in the region of T1-6.

Another, important consideration is the perpetually dynamic interplay between the autonomic (sympathetic and parasympathetic) nervous system. The sympathetic nerve fibers of the lungs arise from the sympathetic chain ganglion at the level of T1-6. While the parasympathetic nerve fibers travel within the vagus nerve as it exits the jugular foramen of the cranial vault and makes its way down the cervical region and through the thoracic inlet, where it then diverges onto the lungs. Therefore, while the osteopathic physician may alter sympathetic outflow by directly working on the thoracic vertebrae, a change in the parasympathetic outflow will require intervention above the thorax in the cervical region, specifically the atlantoccipital joint (C1) and atlantoaxial joint (C2) level, as well as the cranial vault.

Yet another major anatomic component to address is the diaphragm. With the average respiratory rate between 10 to 18 breaths per minute, at minimum the diaphragm will move approximately 14,400 times in a day. The role of the diaphragm goes beyond mere movement as it is intimately connected to the cardiac and pulmonary pleura above and the hepatic and gastric pleura below. In essence, the movement of the diaphragm not only changes the intra-thoracic and intra-abdominal pressures, but also alters the circulation and lymphatic flow in these respective areas.¹⁷ Finally, the mechanical movement of the diaphragm provides an intermittent compressive force on the previously mentioned organs that resembles a visceral “massage” of both the thoracic and abdominal contents.

Osteopathic principles and philosophy

Focusing on the patient as a “whole,” is a simplified view of the principles and philosophy of osteopathic medicine. Andrew Taylor Still, MD, DO, founded osteopathic medicine in 1874 and during this time established the tenets of the body’s own inherent capacity for health and well being, the importance and interrelationship between structure and function, the removal of impediments to the optimal flow of the body’s fluids and nerve function, and the concept that the body is an integrated unit.¹⁴ To achieve this one must look at a patient collectively and evaluate their physical, mental, emotional and spiritual state. Additionally, in today’s world, the clinician must also consider psycho socioeconomic implications that patients face. In fact, numerous studies have mentioned the significant impact of emotional triggers and poor-outcomes in asthmatic individuals with inadequate support systems and insufficient self-care. Not to mention the national and global difficulties in providing accessible healthcare for impoverished patients. Even if patients were able to receive the medications indicated, their response to these medications, as discussed earlier, would be dependent on multi-factorial elements ranging from genetics to the environment. In short, one would have to approach the patient as an individual and treat the person, not the disease.

Elucidation of applicable techniques

Given the above discussion, OMT can provide several different modalities that may benefit an asthmatic patient. First,

by using myofascial release (MFR) and balanced ligamentous tension (BLT) to address thoracic cage and diaphragm impediments, one can restore optimal diaphragmatic motion for that patient. Additionally, an articular technique such as “rib raising” will help to mobilize the thoracic cage, as well as, stimulate the sympathetic chain ganglion and alter sympathetic outflow to the visceral organs. Similarly, using soft tissue techniques such as paraspinal inhibition of the cervical region and a suboccipital release will alter the parasympathetic outflow. This dynamic interplay will promote a balancing between the bronchodilation and bronchoconstriction and pulmonary secretions controlled by the autonomic nervous input. Finally, osteopathy in the cranial field has been shown to be extremely effective in patients who have suffered a hard fall with mechanical injuries to the head or sacrum that have triggered an asthma attack.¹⁹

Evincing case study

During a rural rotation, a twelve year-old female patient with a history of uncontrolled severely persistent asthma was brought in by her mother from school to the clinic. This patient was well known to the clinic, as she would be seen 2-3 times per week for her symptoms. She was often times sent to the clinic during school hours. The patient comes from an economically challenged family and was also noted to be non-compliant with her medications. On this particular visit, the patient ran out of her albuterol MDI and was having an asthma attack. The clinic staff approached the patient in a somewhat dismissive manner, stating that the patient was only trying to get out of school. Upon examination, the patient exhibited diffuse expiratory wheeze throughout all lung fields, moderate accessory muscle use and a pulse oxymetry reading of 93%. The staff was immediately notified to begin a nebulized albuterol treatment. The benefits and risk of Osteopathic Manipulative Treatment were explained to both the parent and patient and consent was obtained. Structural examination revealed Occipitoatlantal joint to be extend rotated right- side bent left with compression, cervical paraspinal hypertonicity, thoracic inlet restriction, T1 flexed rotated right- side bent right, right ribs 1-5 inhalation somatic and bilateral diaphragm restriction with paradoxical motion. During the interim of standard medical care, the patient was given OMT that included a suboccipital release and rib-raising articulation. During the administration of these techniques the patient’s oxygen saturation increased from 93% to 97% and was noted to have decreased involvement of accessory muscles use prior to medication administration. The treatment was continued concomitantly as the nebulized albuterol treatment was delivered. Upon completion of the osteopathic and pharmacological intervention, the patient’s accessory muscle use subsided and the oxygen saturation stabilized at 98%.

This patient did not return to the clinic for approximately 12 days. Given this patient’s previous pattern of two to three clinic visits per week, it would appear that the OMT utilized helped temporarily stabilize her symptoms for a significant number of days. One may argue that refilling her medications was what improved her symptoms. However, it was well known that the patient had exacerbations of her symptoms despite the frequent use of her medications. Therefore, the osteopathic approach utilized on this patient appears to have made an impactful change to the disease pattern and use of healthcare resources.

Discussion

Given its multi-factorial nature, asthma is difficult to treat and requires a comprehensive evaluation on the part of the clinician. A multifaceted approach, including diet, allergen prevention, medication, and alternative modalities such as Osteopathic Manipulative Treatment may work synergistically to control the symptoms of an asthmatic patient and potentially modify the severity. It has been the experience of this author that Osteopathic modalities applied to asthmatic patients during an exacerbation has allowed for rapid resolution of symptoms, prior to and during the administration of any medication. The clinical experience gained from this case study has inspired this author to develop a current research project on the efficacy of Osteopathic Manipulative Treatment in the asthmatic population. This research has received IRB approval and is currently ongoing.

Acknowledgements

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CME Quiz

The purpose of the quiz found on page 35 is to provide a convenient means of self-assessment for your reading of the scientific content in "Uncontrolled Asthma: Osteopathic Manipulative Treatment Applied in a Rural Setting" by Jesus Sanchez, Jr., DO.

To apply for Category 2-B CME credit, transfer your answers to the AAOJ CME Quiz Application Form answer sheet on page 35. The AAO will record the fact that you submitted the form for Category 2-B CME credit and forward your test results to the AOA Division of CME for documentation. You must have a 70% accuracy in order to receive CME credits.

Manipulation Under Anesthesia

October 15-18, 2009 at the MUA Center of Broward in Davie, FL

Course Description:

This course will provide the attendee an understanding of indications, techniques and complications of MUA. It will also provide fundamental concepts of pain management from a multidisciplinary approach including non-pharmacological, pharmacological, interventional and surgical arenas. Pre-operative, peri-operative and post-operative care will be presented in real-time monitoring.

Since the manipulative techniques utilized on an anesthetized patient differ from those utilized in an awake patient, the course will focus on a manipulative procedural protocol for use during MUA.

Topics will be presented with discussion of patient selection including appropriate diagnoses, age, co-morbidities and medical management decisions.

Appropriate physical therapy protocols for the post-procedure period will also be discussed.

Presenting:

Joel D. Stein, DO, FAAO, FAOASM, FACOFP, Program Chairperson

Michael Flicker, DO

James Padula, DO

CME

The program anticipates being approved for 28 hours of AOA Category 1-A CME credit pending approval by the AOA CCME.

Course Location:

MUA Center of Broward
7750 Nova Drive
Davie, FL 33324

What is Manipulation Under Anesthesia?

After medical clearance, the patient is lightly anesthetized to achieve total relaxation, then adjustments and stretching movements which would normally be too painful to even consider are easily, painlessly and quickly accomplished.

How do you know if you need MUA?

Spinal manipulation is needed when joints in the vertebral column become locked and immovable. It is the physician's responsibility to restore the function to previously movable joints.

How does anesthesia help the manipulation?

When movement of the spine is extremely and intolerably painful, the benefit of being unconscious is obvious, but the anesthesia performs other important functions, such as shuts off the muscle spasm cycle to allow spinal movement; sedates the pain perceiving nerves that have been irritated due to the dysfunctional spine; and allows complete muscle relaxation to allow the doctor to stretch shortened muscle groups and to break adhesions caused by scar tissue.

Who Can Benefit From MUA?

MUA can be a valuable procedure for people with chronic neck, back and joint problems--conditions caused by long-term disabilities, accidents, and injuries that have not been responsive to conventional treatment--but MUA is not for everybody. Common, general indications that MUA could be effective include: Fibro adhesion buildup; Chronic disc problems; Herniated disc without fragmentation; Chronic myofascitis; Intractable pain from neuromusculoskeletal conditions; Torticollis; Chronic re-injury; and Failed back surgery.

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A Life in Osteopathy

The 2008 Scott Memorial Lecture

Jerry Dickey

Dr. Dickey stated, "Kirksville is like coming home. My daughter was born here; my son started elementary school and graduated from Northeast a year before I moved to Texas. If I'm not stealing a line from the late Dr. Hollis Wolf about 30 years ago in his Founder's Day programs, he said 'I want you all to know that I was not born in Kirksville, but I lived here long enough to be marred for life...'"

He thanked, as is traditional, Jeanette Scott Webster for having set up this Memorial to her parents and for the distinguished guests and faculty that were present. Speaking to members of the audience, other than the freshman students, he stated, "I guess you are trapped for the next 30 minutes, because I am here to talk to the freshman students. I address you as my junior colleagues and I think of you as my junior colleagues."

When one earns that DO degree, he/she is going to have rights and privileges, but you are also going to have responsibilities, and I want to talk about those responsibilities. In reality, I was born into the osteopathic profession on June 19, 1946. I say I was born into it because at that point in time my father had been in the practice of osteopathic medicine in rural eastern Oklahoma for 14 years. My father entered KCOS in 1928, talked into it by a cousin, Otis, who had entered class at the ASO in 1911. In three years, I will close the circle on a century of continuous involvement of members of my family not only with this profession, but specifically with this school.

I can't remember not receiving osteopathic treatment. My father was fortunate enough to start practice before the advent of even the sulfonamides. Osteopathic physicians were not given access to hospitals at that time. My father graduated in January, 1932, during the Depression. The osteopathic schools ran year round. There were no jobs available. The schools used to give the students summer off so one could get a job and make some money in order to afford to come back. Before the Depression started, my father would go to Akron and make tires for Firestone to put on Model T's, but when the Depression hit all the jobs went to men with families so he stood no chance. One would simply borrow more money and pull your belt in tighter.

During the Depression, we graduated a class in January and June. Can you imagine graduating from a medical school and being labeled a "cultist"? Back in those days, it was unethical to consult with a 'cultist'. So, a graduate of a college of osteopathic medicine had no experience in a hospital, because privileges were denied to you. Although you were denied hospital privileges, with the knowledge one had in their head and what one gained in clinical practice at the college, clinics and in people's homes, they set up practice all over the country.

Some of my first memories included the fact that I was a sickly kid prone to tonsillitis and especially croup. You can't imagine the terror of a two or three year old waking up in the middle of the night and not be able to breathe. There is a characteristic

bark that goes along with croup. I would start to cough and my parents would wake up and would come rushing into the room. My mother was an RN and would find the vaporizer and start filling it with water and salt, and my dad would sit down with his hands and start working on the tissues. I could feel my lungs open up. I could feel the change. That's my first memory, knowing that if I was sick when my dad put his hands on me, I would start to feel better immediately. After the war was over they introduced Penicillin to the civilian population and he was quick to jump on it. Years later, I asked him why and he said 'because I didn't save them all'. He practiced for 15 years where the best thing you could do for an infectious disease was what you could do with your hands to bolster the immune system, to increase circulation, and to increase lymphatic flow.

He was pulling patients through pneumonia. The case that made others aware of my dad's ability, in this little eastern Oklahoma town, was that he saved a case of spinal meningitis with osteopathic manipulation. None of the other doctors (there were five MD's) would take the case, because they were convinced this child was going to die. She was a shirt-tail relative of the richest man in town and didn't want that death on their hands because they knew it would be bad for business. I asked by dad why he took the case and he said he had nothing to lose. He had been in this small town for six months, was running out of money, had no patients, and felt that he had nothing to lose. He told me with the success of that case, he never lacked for patients.

I think my formal osteopathic education probably started when I was maybe five and one-half years old, I might have been six, but I don't think I was in school. I had an upper respiratory tract infection and the anterior lymphatic chain was sore. My neck was stiff and dad would throw me across their big bed and start working. He was a master of soft tissue and he would find an area that was resistant and he wouldn't let go of it. He would work it and work it and work it, and I asked why he was doing this. His answer was not what I had expected but it was seared in my brain, 'because I want all the lymphoid tissue in the body to get a taste of this'. Now think about that. Most of your lymphatics are in Peyer's patches in the bowel because that's the common route of infection or through the throat. Those are the routes of entry of most infections. What he was doing was soft tissue, milking that stuff, getting it out, so that all the lymphoid tissue could fight the infection. I knew that that was a profound answer.

It was years before I really understood what he had said, but I knew at the time that it was important. I decided at age three that I wanted to do what my father did -- to make people feel better just by putting my hands on them. He was glad that one of his three children wanted to follow in the family business. Now that I look back, I was given opportunities that were instrumental. I rode along with him on his house calls and

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waited in the car while he went in and saw his patients. If he was going to do hospital rounds, he asked me if I wanted to go with him and I would. It didn't take long for me to realize that when we got there, I was dropped off in the waiting room and after two hours, he would come sauntering back. While waiting for him, I would count every crack and read every National Geographic in the place. They never changed them. Later he would ask me if I wanted to go and I would say no, I have homework to do. I didn't want to be parked in that waiting room anymore. Unfortunately, I watch this year while that hospital was demolished.

In 1947, we moved to California. California wouldn't issue a license if you didn't have hospital training and since no one trained prior to 1940 in any osteopathic school had hospital training, my dad was forced to go back to school and get a second degree at the College of Physicians and Surgeons. The College of Physicians and Surgeons had an arrangement with LA County Hospital, and every ninth patient was arbitrarily sent to the osteopathic wing. After 15 years in practice, my dad was given the chance to learn how to practice in a hospital-based environment and it changed him. It made him a much better doctor, much more self-assured, and much more aggressive. He vowed that he wouldn't go anywhere that didn't have a hospital.

One of his friends from the Oklahoma days moved to Fort Worth just before the war. Osteopathic physicians were not allowed to serve in the military during the war, so they serviced the civilian population. After dad received his second degree, we moved to Fort Worth, Texas in 1950. They had a 35-bed hospital and five bassinets and dad thought he was in hog heaven. You could get the whole osteopathic community and their families in our back yard because we did it every summer for a barbecue. There were maybe 15 doctors that comprised the core and from those, we put together a very nice hospital. This was characteristic of that generation.

We are a boot-strap profession. We pull ourself up with our own bootstraps. Every generation of osteopathic physicians reaps where they did not sow. We stand on the shoulders of the generation before, of giants. These people all recognized the need, the importance of what they needed and stepped up to the plate. In the 1930's and 1940's it was politics. We had many states that had restrictive licenses. My father got involved in politics when we had to go through this laborious process of reversing these restrictions. Nine years into practice he was President of the Oklahoma Osteopathic Association.

You saw the need; you stepped up and filled it. I'm saying it's still that way now and it's still that way for you. My father was bringing home Dr. Korr's and Dr. Denslow's papers for me to read in high school.

When I got here in 1970 and started school, I had heard about this place all my life, this was mecca. I was a little disappointed when I arrived in Kirksville the first time. This shining city on a hill was a little less shiny than I had expected it to be and a little muddier than I had expected it to be, but it was still mecca. We were always making a dollar out of 15 cents. I looked around and I saw geriatric faculty. I mean these were people at the top of their games, people like Virginia Foster, DO, master of pathology, Max T. Gutensohn, DO, in internal medicine, these

were my idols and I saw nobody behind them.

We were starting to expand as a profession. Michigan State had opened in 1969, Texas in 1970, Oklahoma in 1971; the osteopathic profession was adding a school a year. We had no provision for the creation of faculty. I saw a great need for faculty, but no one was volunteering. No one stepped, so I did. Two classmates and I went to the Dean and requested that he create a fellowship program in OMM based upon the anatomy department's model. The Dean liked the idea and so he did. I felt if what they needed was eager manpower, I would step up to the plate and do it. That added a year to my educational process.

What I hadn't counted on was during that extra year, three months before I graduated, my father stroked in his office and there was no practice to go back to, so in a way it was freeing. I would dedicate my career to education and to the creation of teachers, as many as possible.

In 1974, Dr. Paul E. Kimberly was hired. Those were magic times. You couldn't have run me off with a stick. Intellectually it was like fireworks. He was an osteopathic brat. His mother had been a DO and I was a multigenerational osteopathic brat. We respected each other, like flint and steel. With the assistance of Edna Lay, DO and Larry Bader, DO, we evolved a teaching model and we revived a Department of Osteopathic Manipulative Medicine. Here was mecca and there was no organized clinical department in this institution. I went to Waterville, ME, and studied with Ed Stiles, DO. I returned to Kirksville and brought the hospital-based practice back here and started it. Unfortunately, these are things we take for granted now.

I rotated through osteopathic hospitals where I had all kinds of osteopathic physicians, who taught not so much by word or even by deed, but just an energy they projected. It seeped into you and that was the essence of what it was to be an osteopathic physician. It bothers me now that our Osteopathic hospital network has been dismantled by managed care. We don't have control of our postgraduate clinical education. We really don't have control of our undergraduate education. We have mixed staff hospitals now; the DO influence has been diluted. I worry about you. I worry about each and every one of you. Do you really understand what it's like? My father and his generation had all started before antibiotics so they believed in Osteopathy and what it could do. As a small child in the early 1950's I could tell the difference between the pre-war graduates and the post-war graduates and it kept getting worse.

It seemed as though 1955 was the magic cutoff point. Those who graduated after 1955 had an attitude that Osteopathy and manipulation were an anachronism. Osteopathy had been replaced by biochemical treatments and this was the attitude of the new graduates. It didn't get any better in the 1960's and 1970's and even among my classmates. When Dr. Kimberly retired, I was honored to be given the opportunity to chair the department. I started the residency program here and I tended to select residents that would go into teaching positions. I have also fostered undergraduate teaching fellows and most of the colleges, certainly the older colleges, adopted our model for undergraduate teaching fellows.

Dr. Kimberly and I talked about this before he retired in 1980. We wondered if this was a fluke or was it possible to transmit this teaching model someplace else. I was faced with the hardest decision of my life in 1987 when the Texas College was looking for a chair for their department. I finally made the painful decision that I would leave here and go there. I wanted to see if it was possible to transplant the teaching model that we had developed. Two years of hard work and with a few of the faculty saying, "I can't learn any more, I'm out of here. I can't do things differently." I had to recruit and train new faculty, but, yes, we got the same results. When I left here in 1987, KCOM was #1 in the Boards and at Texas, the Board scores continued to go up. Last year's class at Texas was #1 in the Boards, so yes, this is the crucible. This is the mother institution. This is where the ideas bubble. This is where the ideas are invented and it's just as relevant now as it was then.

What carries the antibiotic to the site of the infection...the blood supply. Everything that we can do to enhance circulation, everything that we can do to enhance the reticuloendothelial system, the immune system of the body, is just as valid today as it was 120 years ago. Nothing has changed. It's just that we have more tools to work with. Osteopathy is not an anachronism. I went to Texas with the idea that, scientifically, this was pretty well proven. I certainly felt that Dr. Korr's and Dr. Denslow's work and the whole team that they had in the Physiology Department scientifically bolstered our case.

In Texas, I met with PhD's who said, "that is old science and that's not up to date and that's not good enough." I got tired of having "show me the literature before I'll believe" thrown in my face, both from students and from allopathic colleagues that I dealt with in the community. I teamed together with Patricia Gwartz, PhD and started the 21st century work on the osteopathic concept. We finished that data collection in 1995, but didn't get published until May 2007. Why? I have a feeling we were asking questions that the medical industrial complex does not want answered.

We had to rewrite and sanitize that paper, kind of "de-osteopathicize" it in order to get it published but the results are ringing. With 95% accuracy we could predict on the basis of tissue texture changes when the animal was being experimentally infarcted with a 40% occluder around the circumflex artery, and that is now cold science. We put a proposal before NIH to do the other half. We did two pilot dogs. I used to watch Dr. Max Gutensohn slide his hands under a patient that was a presumed heart attack and even before we had enzymes or EKG's he would say "yep, they're infarcting". I would slip my hands under and feel the tissues to get a sense of what it felt like and he would show me how he used to treat patients in the 1940's with congestive heart failure and with myocardial infarction and keep them alive to get them to the hospital. It's a very simple sitting rib raising technique. I worked out sort of a doggy equivalent and we did it on two dogs and we were able to show vasodilatation distal to the occluder. NIH just turned us down for funding.

I'm going to take this opportunity, knowing that this is going to be published, to challenge the osteopathic profession to step up to the plate. We need the funding. We need 13 dogs to be statistically significant and we will have closed the loop

scientifically. I am going to be going to Foundations. We are going to be taking it to the AOA. I am going to somehow get this done. I intend this to be the capstone of my career. We need this as a profession. No one will ever be able to say "Show me the literature", and you sit there, kind of a hang dog. You are going to be able to show them the literature, 21st century science, and they can't argue with it.

When I was in Texas, I started a residency program and continued training the next teachers. I probably have product in 15 of our schools right now. Some of them are department chairmen. I hired your current department chairman. Some of my former students are deans...your dean is one of my former students. Others are associate deans and deans at other colleges and department chairmen. But there is only so much one person can do - I need help. As I was cleaning out my office I found an article, probably the first thing I ever had published in a now defunct journal called *Osteopathic Annals*. The late Elliott Lee Hix who passed away last year was guest editor and he asked me to write an article. I did and I decried the fact that we didn't have enough educators. We were expanding and we had no provision for it. Well guess what -- we still have no provision for it and we are expanding two or three colleges a year now. It is getting out of hand and I'm appealing to the profession. We need to start an educational institute to train people how to teach. You can't just automatically assume that you can walk from practice into a teaching position and be effective. All of us that learned on the fly, so to speak, wish that we had had an easier way to do it. So that's another thing I'm challenging the profession to do, get serious about creating a training facility for faculty members.

Now I'm at the point where I have to put down part of my load which means you are going to have to pick it up. We've gotten here through the work of five generations of dedicated people. We are still a minority profession. There is still work to do. Never forget what it means to be an osteopathic physician even though you are going to be training in an allopathic environment. Maintain your osteopathic nature. Use every opportunity to utilize this clinically, so that you can demonstrate to the patients and to the staff members the efficacy of what we do and what makes us special.

Each generation addresses problems that they see. I have some problems that I can see, many that you are going to confront, I can't see. I will be dead but you will have to deal with those problems. One problem, that I can see, is the rapid expansion and the fact that we have some schools which can be typified as trade schools. We have others who curricular model goes back to the apprenticeship method. I don't think this is helping this profession. Five generations have worked very hard to achieve parity. I remember being asked when I would tell people as a high school and college student that I wanted to be an osteopathic physician, "wouldn't you really rather be a real doctor"? I would look at them very intently and seriously and say "why would I want to be an incompletely-trained physician". They would just go away baffled...they didn't know what to say.

We are the best trained physicians...never be ashamed of being a DO. Be proud. Identify the problems that come up in

Continued on page 26

Early Osteopathic Approaches to the Viscera

Using principles and techniques from Still, Sutherland, and Chapman

October 31-November 1, 2009 in New Orleans, LA

Course Description:

This old style visceral course is designed for any osteopathic physician interested in treating visceral problems. Whether you have no experience or 25 years experience with the viscera, you are sure to learn a lot. Dr. Lossing has been training, practicing, and teaching visceral approaches for 23 years.

During that time he has found approaches/techniques that are fast, easy to learn, and achieve results for the patients. These approaches span from reflexes, Still techniques, Sutherland techniques, fluid techniques, and mechanical techniques. In this unique class, we will try to cover palpation, diagnosis, and treatment of all of the major visceral for the body in a short two day format. This format has never been taught before.

The combinations of styles allows for a simple, yet clinically profound experience.

Presenting:

Kenneth J. Lossing, DO, Program Chairperson

A 1994 graduate of the Kirksville College of Osteopathic Medicine, Dr. Lossing completed an internship and residency program at the Ohio University College of Osteopathic Medicine. He studied under the French Osteopath, Jean-Pierre Barral, DO and has become an internationally known speaker on Visceral Manipulation.

Course objectives:

To palpate, diagnose and treat the liver, stomach, esophagus, duodenum, small intestine, large intestine, spleen, kidney, lungs, pericardium, prostate, cervix, and bladder. Diagnose visceral interactions with the cranial system.

Diagnose and treat visceral interactions with the spine.

CME

The program anticipates being approved for 16 hours of AOA Category 1-A CME credit pending approval by the AOA CCME.

Program Time Table

Saturday, October 31..... 8:00 am - 5:30 pm
 Sunday, November 1..... 8:00 am - 5:30 pm
(Includes (2) 15 minute breaks and a (1) hour lunch)

Course Location:

Ernest N. Morial Convention Center
 900 Convention Center Blvd.
 New Orleans, LA 70130

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Human Volume Tissue Investigation Method

D E Mokhov, A V Chashchin, N P Erofeev, D B Vcherashny

Institute of Osteopathy of Medical Faculty St. Petersburg State University, Russia

Summary

The system of registration and recording of the quasi-periodic processes in the human tissues is used. The research is based on detecting, measuring and recording the changes in different tissues reacting on variable degrees of occlusion. This enables us to analyze various changes within the liquid systems as well as changes in micro- or macro-mobility of the tissues.

Presented are experimental data of the wave processes occurring in the human tissues with different constant levels of occlusion used. The spectral characteristics of the periodic volumetric changes in the tissues serve for the evaluation of the body's functional state.

This model can be used as a means of verification for the diagnostic and manipulative purposes in Osteopathy.

Introduction

Various processes associated with movement are taking place within the living body.

These processes are manifested in the form of changes in volume, shape, and tension observed on all the levels of organisation. The processes initiating movements in the tissues proceed uninterruptedly and are reproduced in certain ranges of the amplitude-frequency characteristics reflecting volumetric changes in the tissues.

They are accompanied by the liquid's transfer within the vascular system as well as by the changes of viscous-elasticity at micro- and macroscopic levels.

The rhythmic cardiac beats, respiration, regulatory effects of the nervous, endocrine and immune systems altogether enable the quasi-periodicity of the registered movements (waves).

The Traube-Hernig-Mayer waves are just one example of registered signals.

The occlusive effects (OE) are widely used in routine medical practice, e.g. for measuring the blood pressure (BP). In the course of measuring the BP, pressure (Pc) in the shoulder cuff changes in compliance with a certain law, and then the measuring phenomena become manifested: the Korotkov tones. Occurrence of the Korotkov tone or its disappearance is used for identification of the BP parameters in the decompression regimen.

One should note that occlusion affects the blood flow. Depending on the occlusion degree and its duration, it will be accompanied by changes of haemodynamics. This explains the well-known facts of discrepancy between the measurement results obtained with different techniques, as well as discrepancy in results of successive measurements with the same technique in the same patient.¹

A number of publications^{1,2} elaborates the above approach and the model ideas of the processes occurring in the tissues

under occlusion thus aiming at analysis of not the blood vessels alone, but also the lymphatic vessels and the surrounding tissues. In addition, some experimental data are cited together with the processing and analysis of possibilities of dividing the wave processes in them.

Qualitative Analysis of Phenomena in Occlusion

Apart from distinguished haemodynamic readjustments in the extremity^{1,2} observed in the course of the OE, a number of usually ignored but functionally significant for circulation system changes occur in the tissues. In the tissues, redistribution of liquid compartments and tension occurs: partial displacement and hardening beyond the limits of the under-cuff space (W). In the area of the cuff direct effect upon the tissues, compressing of all tissue components occurs. In the same area, successively along with increase in the pressure, the lymph flow decelerates, venous stagnation (Vv) develops, and mechanical effect (Pc) is exerted upon the artery walls.

Important consequence of local occlusion involves the regulatory readjustments of the vascular tone having local as well as systemic nature. Mechanisms of neural and endocrine control of local and systemic lymph- and blood flow become activated. Thus, because of the great number of structural formations and functional connections in the organism involved in responses to external OE, they initiate a complex response of the organism and predetermine the subsequent compensatory processes.

Figure 1 presents a functional scheme of the (Pc) OE transmission to the structural and functional elements directly involved in response to the occlusion tests. In the scheme below, those elements are indicated:

- the occlusive external cuff from which the Pc pressure is transmitted via skin surface to the whole system of tissues in the space beneath the cuff;
- systems of tissues;
- vascular system;
- liquid compartments (blood, lymph, extracellular and intracellular fluid);
- fascia and bones.

The above structural formations get into mechanical interaction predetermining the nature of their spatial shifting and the processes of liquid component redistribution in the occlusion area. They are recorded as an integral response. The common specifics of tissue responses to OE involves manifestation of changes in volume transmitted as pressure upon adjacent tissues and the cuff. Because of differences in the tissue rheological properties, the summed up effect of the changes has a non-linear character, the changes being manifested to different extent in different layers of tissue at

Continued on page 19

Exercise Prescription - Greenman's Method - January 22-24, 2010 at AZCOM

Course Description: Level II

How to access muscle balance of the musculoskeletal system, particularly in reference to somatic dysfunction. The primary goal is to prescribe an exercise program and self-mobilization techniques to fit the patient's somatic dysfunction in order for the patient to manage themselves.

Presenting:

Brad S. Sandler, DO, Program Chairperson
Philip E. Greenman, DO, FAAO

Learning Objectives

1. To understand the functional anatomical connections of upper and lower quarter musculature to the proximal trunk and pelvis.
2. To introduce the concept of neuromuscular imbalance as a contribution to chronic musculoskeletal dysfunction.
3. To learn exercises to address specific somatic dysfunctions found in the vertebral column and pelvis.
4. To be able to design and sequence a home exercise program for patients to complement manual medicine.
5. To be able to instruct the patient in an exercise program based upon his/her functional goals and life-style.

Prerequisites

Functional Anatomy; (1) Level I course or equivalent

CME:

The program anticipates being approved for 20 hours of AOA Category 1-A CME credit pending approval by the AOA CCME.

Program Time Table:

Friday, January 228:00 am - 5:30 pm
Saturday, January 238:00 am - 5:30 pm
Sunday, January 248:00 am - 1:30 pm
Friday & Saturday include (2) 15 minute breaks and a (1) hour lunch; Sunday includes a 30 minute break.

Course Location:

Midwestern University
Arizona College of Osteopathic Medicine
19555 North 59th Ave
Glendale, AZ, 85308
www.midwestern.edu

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the same levels of the external OE. For recording the pressure integral parameter created simultaneously by all layers of tissue in the area under study a volume-metric converter is used.

A technique is proposed for differentiating the responses of tissue layers to the OE.³ Each level of occlusion is made conditional upon the necessity to exclude one or other tissue contribution from the common process under recording on account of the cuff pressure exceeding the pressure in the tissues themselves. The basis involves a physical mechanism of pressure gradients in the organism functioning systems under study which, in its turn, is the foundation of the device and data processing control algorithm.

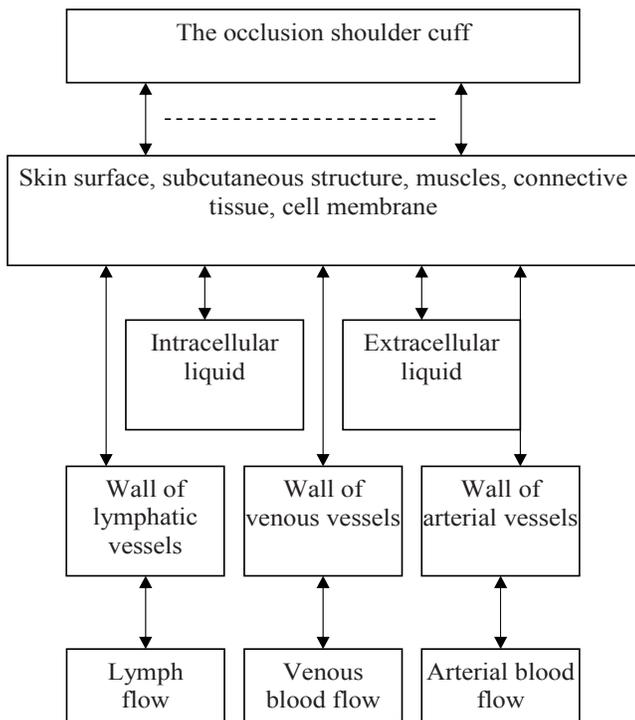


Fig. 1. The scheme of tissue hydro-mechanical interactions beneath the occlusion cuff

The proposed technique includes two principles based on using controllable occlusion:

- identification of the OE level is connected to creation of element-to-element dissociation of the tissue unity;
- control of the OE level enables one to arrange studies in such a way as not to interfere with the functional activity of those tissues whose pressure exceeds the occlusion level.

Under the controllable OE, contribution of separate tissues is successively excluded from the total volumetric change. So, in minor constant levels of Pc first the interstitial liquid is forced out from under the cuff space. Along with the Pc increase in the space beneath the cuff, lymphatic, capillary, venous and arterial vessels are successively pinched. It is expedient to set pressure steps $Pc(constant)_i$ in the study as the OE providing for some time successive occlusion of lymphatic, capillary, venous

and arterial vessels of the extremity. This makes it possible, while keeping the control of the external pressure upon the vessels and tissues, to record their adaptive response in the form of volumetric changes by the associated with them signals of pressure changes in time $Pc(t)$.

The way of processing the recording signals

When selecting the way of signal processing one should pay attention to the fact that a considerable number of the processes occurring in the tissues are quasiperiodic. They are predetermined, in the first place, by the heart pumping ability. External effects are manifested in the response as a change in established processes and adaptation to the new conditions. It seems reasonable to expect that it will be reflected also in the character of the occurring processes and differ from them as compared with the situation without any external effects.

For processing periodic and quasiperiodic signals, spectral analysis techniques will be applied to the results. The techniques will make it possible to distinguish the main frequency components of periodic processes and to identify relative contribution of the control biophysical mechanisms or external factors responsible for their manifestation. In our work, we used these advantages of the spectral studies.

Results of the study and their discussion

The measuring procedure involves recording the changes in the pressure signal variable component in the cuff $Pc(t)$ at creation of external constant level of pressure in the cuff $Pc(const)$. A PC software “Measurement and Automation Explorer” by the National Instruments Company was used for the control. When processing the results, the means of the software package MatLab was used by the algorithm of Fast Fourier Transform (FFT) with the 4096 reading resolution. For discretisation of the signals transmitted to the PC, a 16-discharge analogue-digital converter DAQCard-6036E (National Instruments) established in the computer’s PCMCIA port was used. In addition, converter MPX-5050DP (Motorola) was used as pressure converter. The poll frequency for recorded signals was established at 100 Hz.

For studying periodicity of wave processes in the shoulder tissues in successive series of experiments, various steps of the cuff pressure chosen from the range $Pc(const) = 3...120$ mm Hg were set. Leaving the Pc constant at each step of the OE, the response was registered for at least 3 min. Increase of the pressure upon vessels and soft tissues would initiate respective changes of their volume in response to the OE. The changes of the tissue volume in the space beneath the cuff were transmitted to the cuff and created respective changes of the pressure.

Fig. 2 presents examples of power density spectrogram of the signal variable component $Pc(t)$ at three constant OE levels on the shoulder area tissue. The digitized marks on the vertical axes mean the PDS values in $mm\ Hg^2/Hz$, on the horizontal ones – frequency in Hz.

At all levels of external pressure upon the shoulder area tissues, the spectrograms reveal various harmonics in the high-frequency (within the range 1.2...1.4 Hz) and low-frequency (below 0.6 Hz) areas. They reflect dynamics of volumetric

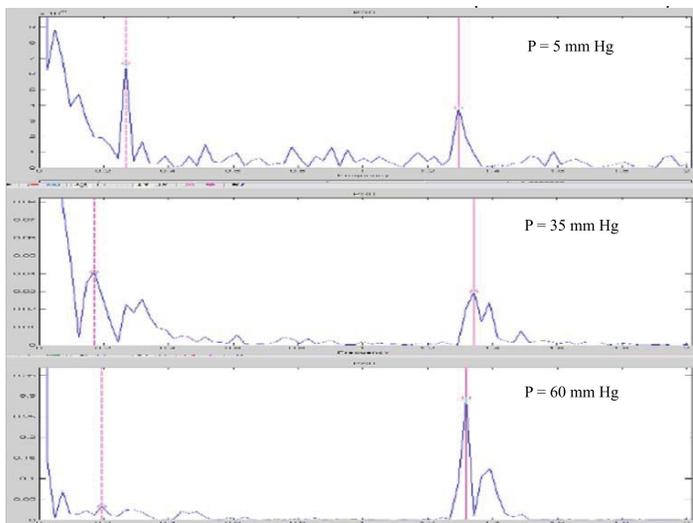
Continued on page 20

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changes in the fast and slow wave processes singled out of simultaneous response of the tissues. The high-frequency peak and its frequency band are associated with the heart pumping ability. In other words, they correspond to heart rate and the range of its changes as they are determined in independent electrocardiographic study. The spectre low-frequency components reflect slow wave processes in the shoulder tissues including modulating effect of respiratory waves, possible manifestation of higher order waves (Traube-Hernig-Mayer waves,^{6,9} reflection and wave superimposition) and other physiological mechanisms.

The spectrogram (Fig. 2) shows that, at each step of the pressure $P_c(\text{const})$, along with its increase from 5 to 60 mm Hg, the low-frequency spectral components of the processes in the shoulder tissue are suppressed as compared with the high-frequency peaks. This seems to be due to occlusion pressure exceeding the level of normal functioning of structures participating in slow wave processes. The spectrograms also reveal the changes of both absolute values of the peaks and the interrelations among them. In all the cases under study (30 subjects), the recorded low-frequency processes corresponded to the frequency range of 6...14/min waves, the range being known in the osteopathic medicine practice as the primary respiratory mechanism.^{4,5} The dispersion of the obtained data seems to be due to individual specific features of the patients.

Fig. 2 Examples of spectrograms of the signal $P_c(t)$ power density (PDS) at three constant levels of the OE in the shoulder area tissue



Analogous studies of the head, elbow areas and lower extremities demonstrated a qualitatively similar picture in the spectrograms.

Conclusion

Obtained results of the study demonstrate a fundamental possibility of differentiation among the processes of dynamic volumetric changes in the human body tissues by means of controllable occlusion effects. Use of spectral analysis enables one to reveal regularities and functional differences of wave processes in the tissue under study. The proposed technique

seems to be universal and can be used as a functional indicator of tissue condition in the human organism.

Acknowledgement

The authors would like to express their gratitude to Mr. Serge Paoletti, president of the World Osteopathic Found (WOF) for his support of our scientific research.

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Continued on page 26

A case report of Osteopathic Manipulative Treatment in a 14 year-old girl with McCune-Albright Syndrome

Makasha Colonvega, Kendi Hensel, Dennis Minotti, II, Stuart Williams

Introduction

McCune-Albright syndrome (MAS) is rare genetic disorder characterized by the classical triad of polyostotic fibrous dysplasia (PFD), café au lait spots, and a variable association of autonomous hyperfunctional endocrinopathies, commonly seen in females as precocious puberty. A diversity of endocrine and nonendocrine abnormalities may exist to include dysfunction of the adrenals, gonads, thyroid, parathyroid, pituitary, heart, liver, bones, and skin. The etiology of the disorder involves a mosaic distribution of postzygotic somatic mutations in the gene coding for the alpha subunit of the stimulatory G-protein.¹ This specific mutation results in a hyperstimulatory state of affected tissue receptors which are responsive to the G-protein-cAMP protein-kinase A dependent pathway. The clinical presentation in MAS is related to its mosaic nature with variable degrees of severity.

Polyostotic Fibrous Dysplasia, a rare skeletal developmental disorder affecting multiple bones, is a common complication associated with MAS. Studies suggest the prevalence of FD in MAS ranges from 46-98% dependent upon the definition of MAS.² The underlying pathology of this condition involves the replacement of medullary bone by fibrous tissue. The integrity of the bone is ultimately compromised, predisposing the spine to atlanto-axial instability, odontoid fractures, spinal cord compression, joint subluxation or dislocations, compression fractures, and scoliosis.^{3,4}

The purpose of this paper is to present a case of OMT in the management of a 14-year-old girl with chronic low back pain and dyspnea as a result of PFD associated with McCune-Albright Syndrome.

Background

McCune Albright-Syndrome is a sporadic genetic disease of rare occurrence. The disease was first proposed by Fuller Albright, Hilde Bruch, and Donovan McCune in 1937 as a result of noting similar clinical findings with a related etiology, 'bone lesions,' 'brown non-elevated pigmented areas of the skin,' and 'endocrine dysfunction.' MAS occurs equally in all races and both sexes, except for precocious puberty. Precocious puberty is the most frequent endocrinopathy in females with MAS, with a prevalence ranging from 64-79% in girls compared to approximately 15% in boys.² The age recognition of MAS is dependent upon the severity. Less severe cases can occur anytime during childhood, whereas severe cases involving multiple endocrinopathies may be seen as early as birth.

Likewise, the mortality and morbidity of MAS is dependent upon the extent of involvement of endocrine and nonendocrine organs. Precocious puberty can lead to the loss of adult height potential. Hyperthyroidism can cause potentially life-threatening tachycardia, osteoporosis, failure to thrive in children, and decreased attention span. Hypercortisolism can cause infantile Cushing syndrome, loss of adult height potential, and may result in death. Growth hormone excess can

lead to gigantism or acromegaly along with associated risks for developing hypertiglyceridemia, hypertension, mild myopathy, and glucose intolerance. Hypophosphatemia due to decreased reabsorption of phosphate in the renal tubules can cause rickets and short stature. Hepatobiliary dysfunction and cardiac disease may also result in early death. PFD tends to occur unilaterally with a non-uniform distribution throughout the skull, spine, and long bones. PFD can present as early as infancy with fractures, bone pain, disfiguring bone deformities, and compressive syndromes of the skull, such as visual loss, proptosis, deafness, and vertigo.

As a result of the mosaic nature of MAS, a multidisciplinary approach to medical care is generally utilized to address the multitude of disease entities involved.

Case presentation

Patient is a 14 year old Caucasian female who was referred to the OMT clinic by her palliative care doctor for chronic back pain secondary to severe scoliosis. She has a significant past history of McCune-Albright Syndrome with associated Polyostotic Fibrous Dysplasia. She also has a history of a right short leg secondary to her PFD and associated uneven femoral bone lengths. She reports having chronic back pain for approximately three years with a constant frequency. She denies any history of prior trauma.

The pain is described to be sharp in nature with a visual analog scale rating ranging from 5 to 10. Patient states that the pain is better with pain medications, but is worse with walking and ambulating. She states that the pain keeps her from falling asleep easily and awakens her from sleep at night. She describes having associated symptoms of difficulty breathing, weakness when bending over to pick up items on the floor, and occasional tingling in her legs when lying in bed. Patient has had multiple MRIs and X-ray studies. She has worn back braces in the past and received injections from a pain management physician. She currently takes Tylenol with codeine to manage the pain.

Patient has a significant past medical history of McCune Albright Syndrome with associated Polyostotic Fibrous Dysplasia. She has had multiple fractures of the upper and lower extremities, most recently 8/2007.

She also has a history of precocious puberty, scoliosis, short right leg, migraines, cardiac arrhythmia, a "heart murmur," and allergic rhinitis.

Patient's surgical history is significant for multiple orthopedic surgeries, approximately 29, for fractures and hardware placement. She has also had tympanostomy tubes placed in both ears as well as a tonsillectomy during early childhood.

She is a pleasant 8th grade student who lives with her biological parents. Both parents are in good health with no known medical conditions. She admits to consumption of caffeinated beverages and some soda.

Continued on page 23

Pelvic Pain: Mechanisms and Evidence Based Diagnosis & Treatment

March 15-16, 2010 in Colorado Springs, CO

Course Description:

The etiology of the lumbopelvic pain has received much attention in this century due to the prevalence and economic impact of this condition. Often, the focus of investigation and treatment has been on topographic anatomy with the goal being to identify the specific pain generating structure (i.e. disc, facet, ligament, muscle). This model has lead to diagnoses that are tissue specific - iliolumbar ligament syndrome, piriformis muscle syndrome. When the faulty structure cannot be identified, diagnoses such as nonspecific low back pain and idiopathic soft tissue disorders are offered.

Recently the focus of research has switched from an anatomical to a functional emphasis. Consequently, a model of how load is transferred through the lumbopelvic region has developed and furthermore, proposals of how the system can break down emerged. Clinically, specific tests have been developed to evaluate the function of the lumbopelvic region paying less attention to pain and more to biomechanical principles. Treatment programs, including both manual medicine and exercise, follow this biomechanical model. In addition, psychological factors, emotional influences and the effect they have on motor control are receiving greater attention amongst practitioners. Recovery requires attention to both the physical and psychological ramifications of dysfunction. This course will address both.

Presenting:

Doris B. Newman, DO, Program Chairperson

Andry Vleeming, Clinical Anatomist, PhD

Frank H. Willard, PhD

CME:

The program anticipates being approved for 16 hours of AOA Category 1-A CME credit pending approval by the AOA CCME.

Course Location:

The Broadmoor
1 Lake Avenue
Colorado Springs, CO 80906

Andry Vleeming, Clinical Anatomist, PhD

Dr. Vleeming is the founder of the Spine and Joint Centre in Rotterdam, The Netherlands; a specialized clinic to treat patients with severe chronic spinal problems. Dr. Vleeming's anatomical and biomechanical research in the lumbopelvic region has been accepted worldwide and incorporated into rehabilitation programs for patients with lumbopelvic dysfunction. This research is the foundation for rehabilitation at the Spine and Joint Centre. In addition, he is the Chairman of the Interdisciplinary World Congress on Low Back and Pelvic Pain. To date, there have been six such congresses which have seen health professionals from all disciplines come together to discuss and develop future research ideas for a clearer understanding of function and dysfunction within the low back and pelvis. Dr. Vleeming has adapted the scientific research of this team into an evidence based clinical model for assessment and treatment of lumbopelvic dysfunction. The protocol for diagnosis and rehabilitation follows sound scientific principles.

Frank H. Willard, PhD

Dr. Willard is a professor in the Department of Anatomy at the University of New England College of Osteopathic Medicine. He has earned a Bachelor of Science in Zoology from the University of Maine and a PhD in Anatomy from the University of Vermont. He was elected Professor of the Year in 1993 at UNECOM and was elected to the Visiting Scholar list from the AAO in 1989. Presently Dr. Willard is a member of the Society of Neuroscience; Sigma Xi, International Society for Developmental Neuroscience; International Brain Research Organization; American College of Neuropsychiatrists and is an honorary member of the AAO and the Russian Osteopathic Association. Dr. Willard is the author of Medical Neuroanatomy; A Problem oriented Manual with Annotated Atlas and Nociception and the Neuroendocrine-Immune Connection.

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Her current medication regimen consists of the following: Ergocalciferol 50,000 IU 1 time per month, Calcitriol 0.25 mcg 1 time per day, Depo-Provera once every three months, Tylenol with Codeine 1 tablet every 4-6 hours prn pain, Cymbalta 20mg 1 capsule q am and 2 capsules q hs, Phospha 250 Neutral 2 tablets QID, and Choline Magnesium Trisalicylate 500 mg 1 ½ tablets by mouth BID. She is allergic to penicillin and Keflex.

Previous radiological studies were obtained and included a description of the patient's severe thoracic (dextroscoliosis) and lumbar (levoscoliosis) scoliotic curves, right short leg, prominent heart size, and evidence of fibrous dysplasia bone lesions, especially in the femurs, humeri, and ilia. Most recent imaging studies in 2007 when compared to prior studies revealed an increase in the scoliotic curves. However, these reports did not mention specific angular measurements of these scoliotic curves. No further imaging studies or laboratory investigations were ordered during these initial visits.

Physical examination

Patient's vital signs were normal: BP 120/64, HR 88, RR 16. Current pain scale rated as 7-8/10. She was of normal weight with a short stature. Patient was alert and oriented to person, time, and place without any signs of acute distress. She walked with an antalgic gait and had gross deformities of the upper and lower extremities, including bowing of the femur, humerus, and tibia. She had a prominent scoliosis which was visually evident on inspection. She also had multiple surgical scars on both upper and lower extremities.

Cranial nerves II-XII were grossly intact. Deep tendon reflexes were normal, +2/4, in both upper and lower extremities. Sensation was intact to light touch. Muscle strength was approximately 5/5 in both upper and lower extremities.

Patient was examined in the seated, standing, and supine positions for somatic dysfunction. Cranial exam revealed a decreased Cranial Rhythmic Impulse (CRI), diffuse nondescript bony abnormalities, and a left lateral strain pattern. Treatment of this region consisted of CV4 and Osteopathy in the Cranial Field (OCF) techniques. In the cervical spine, the OA was found to be neutral, sidebent left, rotated right and was treated with Ligamentous Articular Release (LAR) technique. A significant dextroscoliosis was noted in the thoracic spine with apex at approximately T8. Additionally, the lumbar spine showed a marked levoscoliosis with apex at approximately L3. Both the thoracic and lumbar regions were treated with Myofascial Release (MFR) and Balanced Ligamentous Technique (BLT).

An inhalation dysfunction of the lower rib cage on the left side, ribs 7-12, was noted and appeared to be closely approximating the left iliac crest secondary to her pronounced lumbar levoscoliosis. MFR release and BLT were employed for this region as well. A right-on-right sacral torsion was found in the sacrum and was treated with BLT and Ligamentous Articular Strain (LAS). The left abdominal was also found to be restricted and was treated with LAS.

The initial visit assessment and plan was as follows: 1) McCune Albright Syndrome with polyostotic fibrous dysplasia and rotoscoliosis, 2) Apparent right short leg, likely secondary

to MAS, 3) Chronic back pain, most likely secondary to scoliosis, 4) Mechanical dyspnea due to distortion of the lower left rib cage and scoliosis, and 5) Somatic dysfunction of the head, cervical, thoracic, lumbar, sacrum, rib cage, and abdomen. The patient tolerated manipulation well. She also reported a decrease in pain and an improvement in breathing following treatment. She was encouraged to wear her heel lift, prescribed previously at all times while ambulating. A follow-up visit was scheduled in two weeks for further evaluation.

The patient was seen two weeks later and reported a decrease in pain since the first OMT visit. Pain scale rating was 5/10 at this visit. She had some soreness for two days following that visit as anticipated. She complained of some achiness in the low back and ribs as well as some difficulty with breathing. No other changes or complaints were noted at that time. Vital signs were within normal limits. Evaluation of the spine was similar to the prior visit, except for a right anterior innominate rotation. The patient was treated using prior techniques, MFR, LAS, CV4, and LAR. Treatment was tolerated well and the patient was advised to decrease soda consumption and increase water intake. OMT will continue to be used as an adjunct to her palliative care and a return visit was scheduled within the following three weeks.

Discussion

Medical management of PFD associated with MAS presents many challenges and is difficult to treat. No proven medical therapies exist although bisphosphonates have produced some promising results.¹ In particular, bisphosphonates have been shown to make the lesions less painful. However, there is little consensus in the data regarding the ability of bisphosphonates to heal fibrous dysplasia. In addition to pharmacologic therapeutics, orthopedic surgical intervention is often needed at some point to treat the fractures and bony deformities resulting from PFD lesions. To date, no research exists regarding the use of OMT in the management of musculoskeletal problems associated with MAS.

The case presented illustrates the potential benefits of OMT as an adjunct to palliative care in the management of MAS with associated PFD. The patient in this case suffered from chronic back pain, symptomatic scoliosis, and a right short leg secondary to the debilitating effects of PFD upon the musculoskeletal system. The goal of therapy in this case was not one of cure, but to maintain function, flexibility, and mobility of the spine. The treatment of somatic dysfunctions was also an important goal of therapy. According to osteopathic philosophy, "removal of mechanical impediments allows optimal body fluid flow, nerve function, and restoration of health."⁵

With the utilization of soft tissue, MFR, and indirect techniques, the patient in this case was treated with positive results in these two visits. The patient's subjective pain level using the visual analog scale improved from 7-8 on the first visit to 5 by the second visit. Although an improvement in only 2 or 3 points resulted, it may be substantially important to a patient who has had to endure unrelenting chronic pain for most of his/her childhood years. It is important to consider the psychological impact that arises from chronic pain and disease as an integral part of the treatment approach.

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A noted improvement in the patient's subjective ability to breathe posttreatment was also reported. This was presumed to be a type of mechanical dyspnea that was most likely attributed to the prominent scoliosis in the thoracic and lumbar spine. This finding is in congruence with recent studies that suggest scoliosis to be a causative factor in shortness of breath, restrictive lung disease, and recurrent respiratory infections.^{6,7}

However, improvement overtime should occur with treatment of biomechanical dysfunction in accordance with osteopathic philosophy. Hyde et al (1999) reported upon the benefits of osteopathic treatment for scoliosis as evidenced by a reduction in pain, use of analgesics, apparent leg length discrepancy, and angle of scoliosis.⁸ No attempts to measure the efficacy of treatment upon the degree of scoliosis or leg length discrepancy by X-ray examination were made in this case.

Conclusion

McCune Albright Syndrome is a complex genetic disease with a vast array of associated endocrine and nonendocrine dysfunctions. Since no curative therapy exists presently, medical treatment is primarily one of maintenance and prevention. Further investigation regarding the advantages of conservative treatment, i.e. osteopathic spinal manipulation, as an adjunct to palliative care for this patient population is needed. This case demonstrates the potential benefits of OMT to facilitate pain relief and optimize the relationship between structure and organ function in MAS patients with associated PFD.

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From the Archives

From Hildreth, AG. *The Lengthening Shadow of Dr. Andrew Taylor Still*. Kirkville: The Journal Publishing Company, 1938, Chapter VVI, pp. 181-184.

A Glimpse of Some of Dr. Still's Philosophy and Technic

It is going to be difficult to make this part of my work fully understandable to the average reader. Dr. Still's intimate knowledge of human anatomy enabled him to predict the outcome of osteopathic manipulative treatment applied in certain sections of the spine, i.e., the results that could be expected from such treatment, but the mechanisms by which these results were secured are extremely hard to describe.

Some of Dr. Still's explanations for the results obtained were beyond my comprehension, but it is up to the osteopathic physicians and students of today to work out by experiment and research the various nerve connections which Dr. Still said are there (between spine and viscera), because invariably the treatment applied by him would result in alleviation of symptoms and the restoration of the body to health.

It seems to me that my failure to understand in every instance the connection between the lesion, which was claimed by him to be the causative factor, and the diseased condition, is due to the fact that Dr. Still was a much better student of natural law than I. My hope is that the student of osteopathy today who studies and masters his anatomy, physiology, and other kindred fundamental sciences will be better able than I to fathom the relationship between the various nerve origins and centers as given by Dr. Still and the functions they involved.

Dr. Still said to me one time when we were discussing methods of approach to patients, "Do you know, Arthur, when a patient comes to me for examination and begins to talk to me about symptoms, how she suffers, and what her trouble is, I seldom observe the patient's clothing. I never notice whether she is beautifully dressed and wears silks and diamonds or covered with homespun cloth. I am listening to her story, and while listening, I am seeing in my mind's eye the combinations of systems which go to make up the whole of that body structure. I am concentrating on her story, trying to determine through the description given to me the structural alterations which have occurred to produce the symptoms described.

"I am seeing first the bony framework and the joints which hold it together as one system, the foundation upon which all other structures in the human body are built. I am seeing, especially, the positions of those bony parts and their relationships, one with the other. Then I see the ligaments which hold that framework together, connecting and covering the bones at their joints from the toes and fingers to the base of the brain, marvelous creations of strength that make firm the bony structure. Then I see the muscles inserting in various ways all over the bony framework, some of them covering the ligaments and others beginning and ending in them. They are placed to give needed protection to the framework and at the same time move the bony parts in such a marvelous way, with such harmony that it is hard for the mind of man to conceive of the perfection of their functions.

"I am also seeing in my mind's eye the nervous system, the system which acts in the same capacity in the human body that the telegraph system acts in the commercial world for the interchange of thought. The difference between the nervous system of the human body and the telegraph system which encircles the globe is that one is man-created and the other is divinely created, God-made, if you will. While listening to a patient's story, I try to visualize the anatomy of the nervous system in all its relationships, in every function of the body. The nervous system is one of the most marvelous mechanisms ever created.

"I see its division into the cerebrospinal part and the sympathetic part. The first is made up of the brain, the spinal cord, and the spinal nerves and their branches, reaching out to all muscles, joints, and skin, conveying messages to and from the brain of movement, temperature, pain, etc. The second or sympathetic part is composed essentially of chains of nerve ganglia extending from the base of the brain to the tip of the spinal column, controlling the functions of the internal organs, the circulation of body fluids, and nutrition of the various body parts.

"When you stop to consider how these two great systems are joined together, how they communicate one with the other, you have, in my opinion, the most supreme example of the perfection of the work of the Divine Architect. Each is an individual nerve system, yet so created as to enable nerve impulses to pass from one to the other.

"I further see the arterial system, with its great and small avenues for carrying the blood to every portion of the body. Not a body cell is overlooked. All types of nutritional material and oxygen are carried in that blood stream, substances needed to repair worn-out cells, to grow hair on your head and nails on your fingers, the needed materials for vision and hearing, bone building material, etc. The mechanism whereby these materials are transferred from the blood stream into the vital living cells of the body is beyond description, almost beyond understanding.

"Then I visualize the venous system, another great system of vessels which carries away the waste products to the organs of elimination. There is still a third and most important system of vessels which accompanies the arteries and veins throughout the body. This is known as the lymphatic system. It supplies the serous fluid in which the tissue cells are bathed. It has to do with the mechanism of nutrition, absorption and the protection of cells from harmful poisons and bacteria. And last but not least I see the glandular system of the body and wonder how it brings about its effect in each particular case."

Such was Dr. Still's line of thought as he listened to the complaints of a patient. At another time he described how he divided the spine for diagnostic purposes into sections, each

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Human Volume Tissue Investigation Method

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A Life in Osteopathy

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your practice life, roll up your sleeves like everyone before you, pitch in and address those problems, and make a dent in them. In working together as a cooperative it's amazing what we can accomplish, so I have a plea to you. When you get your DO with all of its rights and privileges, also comes the responsibility to follow in the footsteps of five generations that have built this profession. By virtue of the fact that you took your seat here, I have to assume that you want to be an osteopathic physician, so find out what that is. Most of you could have gotten in to two or three schools but you chose to come here and I applaud you for it. I want to make sure that when you go out that everyone knows and that you know that you are an osteopathic physician and it shows in every decision you make in your interactions with patients. How are you to think about me? I'll quote my favorite author and a great supporter of the osteopathic profession, Mark Twain, the bard of Hannibal - "Just call me a human being, that's enough for me. Nothing worse could be said".

Thank you very much for your attention.

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Application of Osteopathy in the Cranial Field to Successfully Treat Vertigo: A Case Series

Murray R. Berkowitz

Abstract

Vertigo can seriously impact the quality of life of those patients afflicted. This case series presents the application of osteopathy in the cranial field to successfully treat vertigo. Both acute and chronic cases are presented. The epidemiology of vertigo is reviewed and co-morbidities present in cases of vertigo are discussed. The association of vertigo with a not previously reported cranial dysfunction is presented. The need for further large-scale, multi-center research studies is reiterated.

Introduction and epidemiology

Fraix recently reported a case study, review of the literature, and pilot study for research regarding osteopathic approaches to the treatment of vertigo.¹ He provided a brief review of the anatomy and pathology of vertigo, especially the possible etiologies of Benign Paroxysmal Positional Vertigo (BPPV), Meniere's disease, Vestibular Neuritis, and Labrynthitis. While a common presenting problem, there is not much current medical literature available. It is more frequently reported in female patients than in males and new onset is more frequently reported in the sixth decade of life. Reports of the epidemiology of vertigo add to the confusion of the incidence and prevalence of this problem. Neuhauser reported "1-year prevalence estimates for vertigo" for vertigo in the general population of 4.9%.² This statistic is unusual in that incidence is reported for a specific unit of time (that is, the proportion of new cases that occur within that unit of time for a given population); prevalence is the proportion of existing cases compared with the population in question. Neuhauser also estimated migrainous vertigo, Meniere's disease, and BPPV to be 0.89%, 0.51%, and 1.6%, respectively. He reported recurrence rates of 50% at 5 years and a persistence of dizziness of approximately 33% of patients one year after vestibular neuritis. Karatas reported approximately 20% to 30% of the general population to be affected by dizziness. He further reported that of these, approximately 25% were due to central etiologies.³ Thus, approximately 5% to 7.5% of the general population suffers from dizziness associated with vertigo due to a central etiology. Hain presented a review of the multifactorial nature of vertigo.⁴ He further discussed flaws in the studies reported and his conclusions that the prevalence estimates for vertigo in the medical literature are too high. This would support the findings of this author, whose review of cases of vertigo treated in his practice yielded a prevalence of less than one percent. Following are several recently treated cases presented as representative of an osteopathic approach to successfully treating vertigo.

Case #1

A 65-year-old male presented to the Osteopathic Manipulation Medicine (OMM) clinic complaining of dizziness and ringing in his ears for 4½ years. The patient stated his symptoms began about 4½ years ago upon awaking in his hotel room while on a business trip. His symptoms interfered with his life as he could

not drive and felt he had lost his independence. He had been evaluated by various physicians and health providers, including the Emory University Healthcare Center for Rehabilitation Medicine's Dizziness and Balance Center by a Professor of Rehabilitation Medicine and Otolaryngology-Head Neck Surgery and a Professor of Neurology and Otolaryngology-Head Neck Surgery and also by an Otolaryngologist at Ear Consultants of Georgia, PC. He was diagnosed with right vestibular neuronitis and tinnitus with bilateral high frequency sensorineural hearing loss.

The patient suffers from benign prostatic hypertrophy (BPH), hypercholesterolemia, and obstructive sleep apnea (OSA) for which he uses nasal continuous positive air pressure nCPAP at 9 cm H₂O. He underwent an appendectomy in 1953, rotator cuff repair in 1999, and right inguinal hernia repair in 2005. He is taking Vytorin (Ezetimibe 10mg + Simvastatin 10mg), an OTC multivitamin, and Saw Palmetto. He is allergic to sulfa and quinolone drugs and suffered occasional seasonal allergy symptoms. He goes to the gym where he uses the treadmill to walk 2-3 miles for 40 minutes five times a week. The patient denied fever, chills, nausea, vomiting, diarrhea, or loss of consciousness. The Review of Systems was non-contributory except for the chief complaint and history of present illness.

The patient is married and lives with his wife. He is a retired CPA and works occasionally as a consultant. Patient stated he previously used tobacco products (smoked cigarettes one pack per day and quit smoking five years ago). He stated he has never used illicit drugs. He consumes caffeine daily in the form of Cola soft drinks. The patient's father was deceased at age 85 due to metastases secondary to Squamous Cell Carcinoma of the left ear and face. His mother is alive at 89-years-old with a history of pyelonephritis successfully treated with antibiotics and otherwise is in good health. He has three sisters all living and in good health.

Physical examination revealed a 5'9" man weighing 210 pounds with a heart rate of 64 beats per minute, respirations 16 breaths per minute, body temperature 98.6°F, and blood pressure 124/60 mm Hg in the left arm seated and 150/68 mm Hg in the right arm seated. Examination of the head, eyes, nose, throat, neck, cardiovascular system, lungs, and abdomen were unremarkable; examination of the ears revealed tympanic membranes intact, pearly gray, no cerumen bilaterally. There was no movement of the right tympanic membrane with valsalva. Weber test lateralized to the right ear. The Rinne test demonstrated air conduction to be greater than bone conduction, with right greater than left. Neurologic examination revealed cranial nerves II-XII to be grossly intact, deep tendon reflexes 2+ all around, except right brachioradialis reflex was 3+. Muscle strength 5/5 all around except for right thumb to 5th digit opposition 4/5. Sensation was normal. The patient exhibited a tendency to walk toward the left but compensated with a right angular gait. Heel, toe, tandem walk were normal. The patient

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was Romberg negative. The Dix-Hallpike maneuver produced significant left nystagmus. In addition, he had a positive Adson's test on right upper extremity, negative Wright's test, and positive "Military Posture" test (costoclavicular syndrome) on right. Osteopathic structural examination revealed contracted muscles bilaterally at C4-7 with right worse than left and T1-6 on the left. Tender points were found at T1-2 on the left and C5 on the right. Range of motion restrictions were observed as follows: right cervical motion restricted and right sidebending was restricted in the upper-thoracic region. T1-4 FR_LS_L, C4-6 NR_LS_R. Positive standing flexion test on left (about 1/2 inch). Sphenobasilar symphysis was rotated right. Lateral strain was palpated with the basisphenoid to the left and basiocciput to the right. The right temporal bone was internally rotated. Motion of the right occipitomastoid suture was restricted.

The patient brought lab and imaging studies from previous evaluations. His labs were consistent with a diagnosis of sensorineural hearing loss and tinnitus, right greater than left. These were also consistent with right-sided vestibular loss (dizziness) secondary to vestibular neuronitis. His MRIs were negative.

Osteopathic Manipulative Treatment (OMT) to the cervical region (muscle energy and Still Techniques), upper thoracics (HVLA), upper ribs (muscle energy), clavicles (Still Techniques), scalene muscles (soft tissue and muscle energy), and shoulder and pectoral girdle muscles (muscle energy) was performed. OMT to the cranial field normalized the SBS, occiput, and temporal bones, and the occiputomastoid suture.^{5,6,7}

This patient had some of the classic presentation for thoracic outlet syndrome,⁸ although he did not exhibit pain and numbness of the upper extremity typically extending along ulnar aspect of the hand or any pain that was worse with arm elevated or abducted, he did exhibit weakness of hand along the ulnar aspect. The positive Adson's test localized part of his problem to compression by the scalenes, while the positive "military posture" test localized his compression to between the clavicle and first rib. The negative Wright's test decreased the likelihood of there being compression between the pectoralis minor and upper ribs. This was a fairly acute episode, given this was not a presenting complaint. Osteopathic Manipulative Treatment (OMT) in cases of Thoracic Outlet Syndrome is directed toward improving mechanics in the cervical region, upper thoracics, upper ribs, clavicles, scalene muscles, and shoulder and pectoral girdle muscles.⁹ Following treatment, it was noted that there was significant improvement in the thumb to 5th digit strength to 5/5. No symptoms were appreciated at follow-up one week later.

The sacrum and pelvis was normalized and the standing flexion test was negative following treatment. Standing flexion test was still negative on evaluation one week later. His blood pressure did not immediately respond following initial treatment; however, at one week follow-up, his blood pressure was 124/60 mm Hg in the left arm seated and 128/68 mm Hg in the right arm seated. The latter was reduced to 120/60 immediately following treatment

Following treatment of the right temporal bone, there was

a significant decrease of the high-pitch tinnitus in the right ear. Rinne tests were normal, bilateral, and symmetric on evaluation and there was no lateralization appreciated by Weber test performed on evaluation at follow-up one week later.

Immediately following treatment of the SBS, occiput, temporal bones, and occipitomastoid suture, the patient was able to move his gaze in all directions without production of any dizziness. His gait was normalized. Four days following treatment he reported that he was mostly free of symptoms, but was beginning to feel a "fullness" in his head and the beginnings of return of dizziness, but also stated that these dizziness symptoms were not as severe as previously experienced prior to initial treatment. He again received OMT to the cranial field one week later, and there was immediate relief of the dizziness and tinnitus.

The patient remained symptom free for four months when he noticed the beginning of dizziness and ringing in the ears. The SBS was again rotated right. Lateral strain was again palpated with the basisphenoid to the left and the basiocciput to the right. The right temporal bone was slightly internally rotated. Motion of the right occipitomastoid suture was again restricted. He again received OMT to the cranial field, and there was again immediate complete relief of his dizziness and resolution of his tinnitus. He remained symptom free for another nine months. This time a right torsion of the SBS was appreciated, as was slight internal rotation of the right temporal bone, and restricted motion of the right occipitomastoid suture. Application of OMT to the cranial field again brought about immediate and complete relief of dizziness and resolution of tinnitus. The patient has remained completely symptom free since.

Case #2

A 51-year-old male presented to the OMM clinic complaining of recurring episodes of headache and dizziness. The patient stated his symptoms began about 3-4 months ago with headache episodes awakening him from sleep. He characterized the pain as sharp to dull in nature (5 out of 10). Describes pain originating at left temporo-occipital area radiating into left cervical spine and upper shoulder. Patient states he awakens in the morning with headaches and admits to snoring (confirmed by wife). He also complained of more recent onset of bilateral elbow pain associated with his headaches for 2 months. He stated his headache was partially alleviated with "Goody's® Headache Powder" (marketed by GlaxoSmithKline Pharmaceuticals and contains acetaminophen, aspirin, and caffeine in the same formulation as Excedrin); he otherwise does not take any medications or supplements. More recently, the patient noticed blurred vision with exacerbation of the headache episodes. The patient also complained of numbness and tingling of the hands bilaterally in the distribution of the 4th and 5th digits and the ulnar surface of the palm. He claimed these sensations were not associated with his recurring headaches. Finally, patient complained of insomnia for 12 years for which he was prescribed Ambien (Zolpidem tartrate) 10 mg prn by his internist.

The patient stated that he had measles, mumps, and rubella as a child and has suffered from hemorrhoids for about one year. He was hospitalized for 2-3 days for an upper respiratory viral

infection in 1988. He had a motor vehicle accident in 2004 and was not hospitalized. He has no surgical history. He is allergic to sulfa drugs and penicillin and suffered occasional seasonal allergy symptoms. The patient denied fever, chills, nausea, vomiting, diarrhea, or loss of consciousness. The Review of Systems was non-contributory except for the chief complaint and history of present illness.

The patient is married and lives with his wife. He owns a construction company that employs approximately 70 people. Patient stated he never used tobacco products. He stated he has never used illicit drugs. He consumes caffeine daily (Cola soft drinks) and drinks alcohol approximately 3-4 times per month. The patient's father is deceased at age 77 due to possible MI or complications from stent placement. His mother is alive at 78-years-old with history of skin cancer, hypertension, and occasional gout, but otherwise is in good health. He has one sister diagnosed with Systemic Lupus Erythematosus 2-5 years ago (the patient was not certain of timing).

Physical examination revealed a 5'10" man weighing 175 pounds with a heart rate of 68 beats per minute, respirations 16 breaths per minute, body temperature 98.6°F, and blood pressure 110/70 mm Hg. Examination of the head, eyes, ears, nose, throat, neck, cardiovascular system, lungs, and abdomen were unremarkable; examination of the ears revealed tympanic membranes intact, pearly gray, no cerumen bilaterally. There was no movement of the right tympanic membrane with valsalva. Weber test lateralized to the right ear. The Rinne test demonstrated air conduction to be greater than bone conduction, with right greater than left. Neurologic examination revealed Cranial nerves II-XII grossly intact, deep tendon reflexes 2+ all around. Muscle strength 5/5 all around, except weakness (4/5) observed 5th to 1st digits opposition bilaterally (thumb to pinky). Sensation was normal. Patient exhibited a tendency to walk toward the left but compensated with a right angular gait. Heel, toe, tandem walk were normal, except for minor inflare on left with gait. The patient was Romberg negative. The patient exhibited positive Spurling tests and positive Adson's tests on both upper extremities. Negative Phalen and Tinel tests were negative. The Dix-Hallpike maneuver produced significant left nystagmus. Osteopathic structural examination revealed contracted muscles bilaterally at C4-7 with right worse than left and T1-6 on the left. Tender points were found at OA on the left and left mastoid, and C8 on the right. Range of motion restrictions were observed as follows: left cervical motion restricted and right sidebending was restricted in the upper-thoracic region. T4 FR_RS_R, T7 FR_LS_L, T12-L1 FR_LS_L, C8 NR_LS_R, elevated right 1st rib, left posterior innominate, right anterior innominate, left inferior lateral angle, superior right medial malleolus, Positive standing flexion test on right (about ¾ inch). Sphenobasilar symphysis was rotated right. Lateral strain was palpated with the basisphenoid to the left and basiocciput to the right. The right temporal bone was internally rotated. Motion of the left occipitomastoid suture was restricted.

The patient brought lab and imaging studies from previous evaluations. His labs of October 1, 2007, were consistent with hypercholesterolemia (total cholesterol = 237, triglycerides = 154, LDL = 155), and eosinophils were 7.6 (normal 0-6.0), otherwise his CBC and chemistries were normal. His MRIs

showed a small but significant left posterior disk protrusion extending beyond smaller spurs and causes deformity of the thecal sac and probably minor deformity of the left anterior margin of the spinal cord at C6-7. Mild disk degeneration was noted at C4-5 and C5-6. Mild hypertrophy of the left joint of Luschka at C3-4 with mild narrowing of that foramen. Straightening of the Cervical spine lordosis was noted. No spinal cord lesions were noted from C7 to T3. MRI of the brain revealed only mild, chronic facial sinusitis with mucosal thickening in the right maxillary antrum and to a lesser degree in the ethmoids. The other sinuses were clear, including mastoids. There was no mass effect or focal lesions. Cervical carotid MRA noted multiple small defects involving both common carotid arteries, and decreased signal strength involving the proximal portion of each internal carotid artery and minor deformities of the proximal portions of the external carotid arteries were noted. Hemodynamically significant disease was noted. Very high-grade stenosis was not indicated; however, significant narrowing and plaque ulceration was deemed quite possible. Correlation with Doppler sonography was recommended.

OMT to the cervical region (muscle energy and Still Techniques), upper thoracics (HVLA), upper ribs (muscle energy), clavicles (Still Techniques), scalene muscles (soft tissue and muscle energy), and shoulder and pectoral girdle muscles (muscle energy), sacrum (muscle energy), lumbar spine (soft tissue, counterstrain, and muscle energy), psoas (muscle energy), hamstrings (muscle energy), and periformis (muscle energy) was performed. The thoracic outlet was treated with Direct Myofascial Release. Patient was given exercise and stretching prescription for psoas muscles. OMT to the cranial field normalized the SBS, occiput, and temporal bones, and the occipitomastoid suture. It was recommended that patient have a night polysomnogram to rule out sleep apnea or other sleep disorder and also to have a Doppler sonogram performed to better correlate MRA findings (noted above).

This patient had the classic presentation for thoracic outlet syndrome. The positive Adson's test localized part of his problem to compression by the scalenes. The negative Wright's test decreased the likelihood of there being compression between the pectoralis minor and upper ribs. This was a fairly acute episode, given this was not a presenting complaint. Osteopathic Manipulative Treatment (OMT) in cases of Thoracic Outlet Syndrome is directed toward improving mechanics in the cervical region, upper thoracics, upper ribs, clavicles, scalene muscles, and shoulder and pectoral girdle muscles. Following treatment, it was noted that there was significant improvement in the thumb to 5th digit strength to 5/5. The sacrum and pelvis was normalized and the standing flexion test was negative immediately following treatment. His gait was normalized.

Following treatment of the left temporal bone, the tenderness at the left mastoid resolved. Immediately following treatment, his headaches, neck and upper extremity pain resolved. The patient has remained completely symptom free since initial treatment.

Case #3

A 56-year-old male presented to the OMM clinic

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complaining of dizziness and ringing in his ears for 4½ years. The patient stated his symptoms began about 4½ years ago upon awaking with ringing in his ears and dizziness. Patient stated he “feels like I’m [the patient] is spinning in a counterclockwise fashion.” He stated he first had problems with dizziness and ringing in his ears around 1996; these lasted about a year. The dizziness resolved, but the tinnitus persisted. In 2003-4, the dizziness returned. Antevert (Meclizine HCl) did not help with the dizziness; Clonazepam (0.5mg once a month) and other anti-seizure medications make the symptoms worse. Vestibular rehabilitation did not work. The patient described that “walking and driving are the two hardest things to do.” He indicated that rapidly turning his head to the right produces increased symptoms. He stated that he has learned to partially compensate by rotating his head and then having his eyes follow. The patient stated he has constant left sided headaches. He has been evaluated by various physicians and health providers, including a Professor of Otolaryngology in the Shands Clinic at the University of Florida in August 1996 and an Assistant Professor of Neurology in the Center for Dizziness and Balance Disorders at Emory University. He was diagnosed with partial right-sided vestibulopathy of unknown origin, chronic imbalance, episodic dizziness, and tinnitus with bilateral high frequency sensorineural hearing loss.

The patient suffers from hypertension, hypercholesterolemia, and seasonal allergy symptoms. He has no known drug or food allergies. He underwent a tonsillectomy in 1960, a vasectomy in 1984, and left arthroscopic shoulder surgery in 2004. He takes Diovan HCT 120/12.5 mg and Zocor 20 mg daily, is prescribed Clonazepam 0.5 mg at bedtime for dizziness, and Allegra 180mg po prn for allergy symptoms. The patient stated he suffers from nausea and vomiting but denied fever, chills, diarrhea, or loss of consciousness. The Review of Systems was otherwise non-contributory except for the chief complaint and history of present illness.

The patient is married 29 yrs and lives with his wife. He has 2 sons, 26y/o and 23y/o, in excellent health. He is a retired civil service manager of the county social welfare department. The patient stated he never consumed alcohol, used tobacco products or illicit drugs. He does not consume caffeinated beverages. His father died at 68 years old due to bone metastases from Prostate cancer. His mother is alive at age 79 in good health. She lives independently. He has one sister (54 years old) and one brother (49 years old) both in excellent health.

Physical examination revealed a 5’10” man weighing 182 pounds with a heart rate of 78 beats per minute, respirations 12 breaths per minute, body temperature 98.6°F, and blood pressure 130/80 mm Hg. Examination of the head, eyes, nose, throat, neck, lungs, and abdomen were unremarkable; examination of the ears revealed tympanic membranes intact, pearly gray, no cerumen bilaterally, without bulging or retraction. No fluid or drainage was appreciated. There was no movement of the tympanic membranes with valsalva or insufflation bulb. Weber test was negative. The Rinne test demonstrated air conduction to be greater than bone conduction, bilaterally. Examination of the heart revealed a I/VI split S2 murmur. Neurologic examination revealed cranial nerves II-XII grossly intact, deep

tendon reflexes 2+ all around. Muscle strength was 5/5 all around. Sensation was normal with intact touch discrimination. The patient exhibited a tendency to walk toward the right but compensated with a left angular gait. Heel and tandem walk were normal; the patient could not walk on toes. The patient was Romberg positive to the right. Tinel’s, Phalen’s, Adson’s, and Spurling’s tests were all negative.

The patient exhibited a significant left nystagmus on turning his head to the right. Osteopathic structural examination revealed contracted muscles at C2-6 on the right and T2-6 on the left. Tender points were found at T3-4 on the left and C4 on the right. Range of motion restrictions were observed as follows: right cervical motion restricted and right sidebending was restricted in the upper-thoracic region. T1-4 FR_LS_L, C3-5 FR_RS_R, L1 FR_RS_R, and L3-4 FR_RS_R. He exhibited a positive standing flexion test on right (about ½ inch). Sphenobasilar symphysis demonstrated left torsion. Lateral strain was palpated with the basisphenoid to the left and basiocciput to the right. The left temporal bone was externally rotated and the right temporal bone was internally rotated. Mastoid bone was prominent on the right and motion of the right occipitomastoid suture was restricted.

The patient brought lab and imaging studies from previous evaluations. His blood chemistries and lipid profile were unremarkable. His labs were consistent with a diagnosis of sensorineural hearing loss and tinnitus. His MRIs were negative and were accompanied by radiology report (March 17, 2006) which was consistent with a previous study (March 29, 1996). His posturography study (1996) was negative, which is inconsistent with both his symptoms and the diagnosis of vertigo.

OMT to the cervical region (muscle energy and Still Techniques), upper thoracics (HVLA), upper ribs (muscle energy), clavicles (Still Techniques), scalene muscles (soft tissue and muscle energy), and shoulder and pectoral girdle muscles (muscle energy), lumbar region (Still Techniques and muscle energy), and sacrum (counterstrain) was performed. OMT to the cranial field normalized the SBS, occiput, and temporal bones, and the occipitomastoid suture. The cervical, thoracic, and lumbar spine somatic dysfunctions were normalized and the somatic dysfunctions were resolved following treatment. The patient did not express any recurrence of somatic symptoms. The sacrum and pelvis was normalized and the standing flexion test was negative following treatment, standing flexion test remained negative on follow-up evaluation eleven days later. His gait was normalized. Immediately following treatment of the SBS, occiput, temporal bones, and occipitomastoid suture, the patient was able to move his gaze in all directions without production of any dizziness. Following treatment of the temporal bones, there was a slight decrease of the high-pitch tinnitus in both ears. Rinne tests were normal, bilateral, and symmetric immediately following treatment and on follow-up evaluation eleven days later. Nystagmus had resolved immediately following treatment; at the follow-up evaluation, there was only a momentary left nystagmus flicker. No nystagmus was appreciated immediately following treatment at the follow-up appointment. Four days following initial treatment, the patient reported that he was mostly

free of symptoms, but was beginning to again feel increased dizziness with counterclockwise rotation; he also stated that these symptoms were not as severe as previously experienced prior to the initial treatment. Structural exam at the follow-up appointment (eleven days after the initial treatment) revealed OA ER_LS_R and C4 FR_RS_R. The sphenobasilar symphysis again demonstrated left torsion. Lateral strain was palpated with the basisphenoid to the left and basiocciput to the right. The left temporal bone was externally rotated and the right temporal bone was internally rotated. Mastoid bone was prominent on the right and motion of the right occipitomastoid suture was again restricted. He again received OMT to the cranial field and cervical spine, and the dizziness immediately resolved. He has remained symptom free ever since.

Case #4

A 45 year-old man presented to the OMM clinic complaining of intermittent dizziness when lying on his right side. He stated that the room appeared to be spinning counterclockwise. His symptoms began about two weeks prior. He has suffered from recurrent ear infections for a period of six months about two years ago.

The patient was diagnosed about one year earlier with hypothyroidism treated with Synthroid 0.075mg daily and has been an insulin-dependent diabetic since he was 10 years old. He is treated with Humalog-Lantus. He takes 150mg Zantac (Ranitidine HCl) daily for GERD for about five years. He has no known drug or food allergies and no hospitalization or surgical history. The patient denied fever, chills, nausea, vomiting, diarrhea, or loss of consciousness. The Review of Systems was non-contributory except for the chief complaint and history of present illness

The patient is married and lives with his wife and children. His son is an 18-year-old insulin-dependent diabetic with hypothyroidism; his 15- and 2-year-old daughters are in good health. He has worked as a draftsman in an architectural firm for about 20 years. His father and mother are both alive at 80-years-old and 77-years-old, respectively; both are in good health. He previously smoked less than one pack per day of cigarettes and quit smoking about five years ago. He drinks two cups of caffeinated coffee a day – one in the morning and the other after work. He denies having used alcohol or illicit drugs.

Physical examination revealed a 6'0" man weighing 225 pounds with a heart rate of 72 beats per minute, respirations 16 breaths per minute, body temperature 98.6°F, and blood pressure 130/80 mm Hg. Examination of the head, eyes, ears, nose, throat, neck, lungs, and abdomen were unremarkable. Examination of the heart revealed a I/VI systolic murmur with an irregularly irregular rhythm. Neurologic examination revealed cranial nerves II-XII to be grossly intact, deep tendon reflexes 2+ all around. Muscle strength 5/5 all around. Sensation was normal. Heel, toe, tandem walk were normal. The patient was Romberg positive to the right. The Dix-Hallpike maneuver was negative; however, the patient exhibited a right nystagmus on turning his head to the right. No laboratory of imaging studies were available. Osteopathic structural examination revealed contracted muscles bilaterally at L1-2. Tender points were found at L1-2 bilaterally. Standing and seated flexion tests

were negative. Left torsion of the Sphenobasilar symphysis was appreciated. The right temporal bone was internally rotated and the left temporal bone was externally rotated. Motion of the right occipitomastoid suture was restricted. The CRI was 14.

OMT to the cranial field normalized the SBS, occiput, temporal bones, and the occipitomastoid suture. The sacrum was treated using counterstrain. Immediately following treatment of the SBS, occiput, temporal bones, and occipitomastoid suture, the patient was able to move his gaze in all directions without production of any dizziness. The patient could lie in the right lateral recumbent position without experiencing any dizziness or vertigo. He has remained symptom free since his treatment.

Discussion

Magoun quotes Pritchard, Scott, and Girgis,^{6,10} who showed “that minimal motion does exist between the bones of the skull.” He presents information from a clinical case regarding displacement and disturbance of the right temporal bone that was sufficient to affect the organ of equilibrium on the side causing dizziness. He further indicates that this displacement “need not be of sufficient magnitude to be demonstrable in the X-ray.” This literature is consistent with the cases being treated here. Unlike the predominance of women as reported in the medical literature, the population being treated in this practice for vertigo is male.

In the cases of vertigo and tinnitus reported in this case series, there is internal rotation on one side only. In the case of vertigo and no co-morbid tinnitus, there is internal rotation on the affected side with external rotation of the contralateral temporal bone. This case is more acute than those presented here with co-morbid vertigo and tinnitus. A possibility is that vertigo may begin acutely with internal rotation of the affected side and external rotation of the contralateral side and if the external rotation resolves as the problem becomes more chronic, the remaining internal rotation of the ipsilateral temporal bone may be associated with the onset of tinnitus. This possibility needs much greater research and large-scale case-control studies.

The more chronic and long-standing cases of vertigo also reveal the presence of co-morbid cervical and thoracic somatic dysfunctions. These cases demonstrate the presence of scalene and clavicle involvement, with the longest of these cases demonstrating the presence of Thoracic Outlet Syndrome. Given the absence of these dysfunctions in the acute case of vertigo, the association is most likely the development of the scalene and clavicular involvement as a possible sequellae to the cranial dysfunction that led to vertigo; more research is clearly indicated. These cases also revealed the presence of restriction of the occipitomastoid sutures of the ipsilateral side. This was not previously reported in the literature.

These cases also demonstrate that the longer-standing and more chronic the presenting problem, the more treatments that may be necessary. This fits the generally accepted paradigm. They also show that even extremely chronic cases may be successfully treated with application of osteopathy in the cranial field in a relatively finite number of treatments; an osteopathic approach renders definitive care of vertigo and co-morbid tinnitus possible. Finally, these cases demonstrate that

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much greater epidemiologic research is needed, beginning with large-scale, multi-center case-control studies.

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From the Archives

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section representing the so-called “centers” of control for the various parts of the body including the internal organs. These sections, with the exception of two, were composed of four vertebrae each: The upper cervical (3), lower cervical (4), upper dorsal (4), mid-dorsal (4), lower dorsal (4), the upper four lumbar, and the fifth lumbar and sacrum. The four upper lumbar vertebrae he described as one division, the fifth lumbar or lowest lumbar vertebra and the sacrum were another division. The causes of impaired health, sickness, pain, and disability were directly related to mechanical alterations in the joint structures in these various sections of the spine. Mechanical disturbances here irritated the nerves which in turn affected the part or parts supplied by them, resulting in disturbed function, lowered resistance, disability, and pain.

For instance, he claimed that the circulation to the skin of the head and the circulation to the eyes, the nose, ears, and the throat are largely controlled by nerves related to the upper cervical section, of the spine. It was his opinion, however that in order to get the best results, the osteopathic physician, in treating head and neck conditions, must not only look at defects at the base of the brain and in the cervical region, but also that he must consider the sacrum at the other end of the spinal column. The sacrum is truly the foundation of all the vertebrae in the spine. The “human mechanic,” as he loved to term the osteopathic physician, must understand all the laws connected with body mechanics. He should know that unless the position of the fifth lumbar was correct in relation with the sacrum, all the vertebrae, above, clear up to the first cervical, might be influenced; they might be drawn out of line by muscle pull, as the attempt is made to compensate for a shift in body weight. Hence, Dr. Still emphasized the fact that all vertebrae, the whole length of the spinal column, must be in correct position in order to secure the best results.

The vasomotor center in the lower portion of the brain, which controls the function of contraction and dilatation of blood vessels and consequently the circulation to the entire body may also be influenced by lesions affecting the upper cervical region. Hence, in the cure of all forms of eczema, local or general, this center must be reached through that area.

He also laid stress upon the necessity of seeing that the jaws were properly articulated, especially was this true, he said in diseases of the mouth the tongue, and the throat; even in deafness, he claimed the disturbed articulations of the jaw may be at fault. My wife’s eyes were treated according to Dr. Still’s reasoning along this line, as chronicled in an earlier chapter in this book. The region of the first, second and third cervical was that section of the spinal cord which, Dr. Still claimed, controlled the circulation in and around the eye.

He also had a most profound respect for the manner in which the circulation to the spinal cord itself was accomplished. The perfection of the mechanism which so beautifully controlled the minutiae of the circulation of the spinal cord awed him. Here, of course, was the complete fulfillment of the Divine plan.

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1. Asthma has components of both bronchospasm and which of the following?
 - A. Gene Mutation
 - B. Inflammation
 - C. Suppuration
 - D. Cell lysis
2. Bronchial spasm and increased secretions are caused by over-activity of which of the following?
 - A. Sympathetic innervation of bronchi
 - B. Mucoïd goblet cells
 - C. Vagus nerve
 - D. Beta-Adrenergic receptors
3. Mechanical injury to which of the following areas has been shown to precipitate an asthma attack?
 - A. Lower extremity
 - B. Upper extremity
 - C. Clavicle
 - D. Sacrum
4. The osteopathic approach to asthma patient would lead the physician to look at which of the following?
 - A. Allergies
 - B. Socioeconomic status
 - C. Emotional state
 - D. All of the above

June 2009 AAOJ CME quiz answers:

1. B
2. C
3. A
4. D
5. C

Answer sheet to September 2009 AAOJ CME quiz will appear in the December 2009 issue.

Component Society Calendar of Upcoming Events

September 11-13, 2009

FOMA Mid Year Seminar
Grand Hyatt Tampa Bay, Tampa, FL
800-226-3662 <http://www.foma.org/>

September 25-27, 2009

The Midline: Embryology, Anatomy, Organization and Function
San Francisco Marriot Hotel, Burlingame, CA
Course Director: Elliott S. Blackman DO
The Cranial Academy
8202 Clearvista Pkwy, #9-D Indianapolis, IN 46256
(317) 594-0411 FAX: (317)594-9299
info@cranialacademy.org Web site:
www.CranialAcademy.org

October 16-18, 2009

An Osteopathic Approach to the First Two Months of Life
UNECOM, Biddeford, ME
Contact SCTF, Judy Staser 1-817-926-7705
JHS4116@sbcglobal.net

December 4-6, 2009

Indiana Osteopathic Association 28th Annual Winter Update
Crowne Plaza Hotel at Historic Union Station
Indianapolis, IN
21.5 hours category 1-A CME credit anticipated, pending approval by AOA CCME
Contact: IOA, 800/942-0501 or 317/926-3009

January 28-31, 2010

Ophthalmologic Principles and Their Relationship to Osteopathy in the Cranial Field
San Francisco, California
Course Directors: Paul E. Dart, MD, FCA
The Cranial Academy
8202 Clearvista Pkwy, #9-D Indianapolis, IN 46256
(317) 594-0411 FAX: (317)594-9299
info@cranialacademy.org
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February 13-17, 2010

Midwinter Introductory Course in Osteopathy in the Cranial Field
Fort Worth Hilton, Fort Worth, TX
Course Director: Ralph W. Thieme DO
The Cranial Academy
8202 Clearvista Pkwy, #9-D Indianapolis, IN 46256
(317) 594-0411 FAX: (317)594-9299
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February, 19-21, 2010

Bensoussan Course – Intermediate Course
Fort Worth Hilton, Fort Worth, TX
Course Directors: Paul E. Dart, MD, FCA
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April 8-11, 2010

Deepening Your Osteopathic Perceptual Field: Experiencing the Phenomena of Primary Respiration Through Continuum Movement
San Francisco Bay Area
Course Director: Bonnie Gintis, DO
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May 14-16, 2010

Cranial Base
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East Coast
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June 12-16, 2010

Cranial Academy June Introductory Course in Osteopathy in the Cranial Field
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June 17-20, 2010

Annual Conference - Dwelling Place: Spirit and Matter in Osteopathy
Conference Director: R. Paul Lee DO FFAO
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2. Submit original plus two copies. Retain one copy for your files.
3. Check that all references, tables and figures are cited in the text and in numerical order.
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