The AAO JOURNAL

Forum for Osteopathic Thought

Official Publication of the American Academy of Osteopathy

Tradition Shapes the Future

Volume 25 • Number 1 • June 2015

Severe nausea and vomiting in pregnancy can cause patients to suffer from dehydration, electrolyte imbalance, malnutrition, and anorexia. In the case study that starts on page 13, authors Katherine Anne Markelz, OMS IV, and Janice Upton Blumer, DO, suggest that osteopathic manipulative treatment is valuable for these patients.

Judith A. O'Connell, DO, MHA, FAAO, challenged her audience with the 67th annual Thomas L. Northup, DO, Lecture, which begins on page 7.

The American Academy of Osteopathy is your voice...

in teaching, promoting, and researching the science, art, and philosophy of osteopathic medicine, with the goal of integrating osteopathic principles and osteopathic manipulative treatment in patient care.

The AAO Membership Committee invites you to join the American Academy of Osteopathy as a 2015-16 member. The AAO is your professional organization. It fosters the core principles that led you to become a doctor of osteopathic medicine.

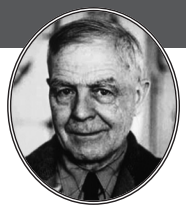
For $5.27 a week (less than the price of a large specialty coffee at your favorite coffee shop) or just 75 cents a day (less than the cost of a bottle of water), you can become a member of the professional specialty organization dedicated to you and osteopathic manipulative medicine (OMM).

Your membership dues provide you with:

- a national advocate for OMM, both within the profession and with health care policy-makers and third-party payers.
- a champion that is monitoring closely and responding aggressively to the standards being developed for the single accreditation system for graduate medical education.
- referrals of patients through the "Search for a Physician" tool on the AAO website and from calls to the AAO office.
- discounts on continuing medical education at the AAO's annual Convocation and its weekend courses.
- automatic acceptance of AAO-sponsored courses by the American Osteopathic Board of Neuromusculoskeletal Medicine, the only certifying board for manual medicine in the medical world today.
- networking opportunities with peers.
- discounts on offerings in the AAO's online store.
- complimentary subscription to *The AAO Journal*, published electronically 4 times annually.
- complimentary subscription to the online *AAO Member News*, published 8 times annually.
- weekly *OsteoBlast* e-newsletters, featuring research on manual medicine from peer-reviewed journals around the world.
- practice promotion materials, such as the AAO-supported "American Health Front!" segment on OMM.
- discounts on advertising in AAO publications, on the AAO website, and at the AAO's Convocation.
- the fellow designation of FAAO, which recognizes DOs for promoting OMM through teaching, writing, and professional service and which is the only earned fellowship in the osteopathic medical profession.
- promotion of research on the efficacy of osteopathic medicine.
- support for the future of the profession through the Student American Academy of Osteopathy, the National Undergraduate Fellows Association, and the Postgraduate American Academy of Osteopathy.

If you have any questions regarding membership or membership renewal, contact AAO Membership Liaison Susan Lightle at SLightle@academyofosteopathy.org or at (317) 879-1881, ext. 217.

Sutherland Cranial Teaching Foundation Upcoming Courses



SCTF Continuing Studies Course
The Face
October 9–11, 2015
Embassy Suites Hotel O'Hare
5500 North River Road | Rosemont, IL 60018
Free shuttle available to the hotel.

Course Director: Douglas E. Vick, D.O.
Faculty: SCTF Board of Trustees and Associates
Enrollment limited to 40
20 hrs 1A CME anticipated | Cost: TBA

Limited to DOs and MDs with 3 years post-graduate clinical experience in Osteopathy in the Cranial filed.

Two basic courses required. One must have been an SCTF Basic Course and the other must have been an approved Basic Course.

Course Director will evaluate all applications.

Visit our website for enrollment forms and course details: www.sctf.com
Contact: Joy Cunningham 907-868-3372
Email: jcunningham4715@yahoo.com

LUCRATIVE NMM/OMM PRACTICE FOR SALE

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For further information, contact **Kenneth J. Klak, DO**, at KKlak.DO@gmail.com or (440) 799-4433. Dr. Klak has 40 years of continuous experience providing osteopathic manipulative medicine.

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3500 DePauw Blvd, Suite 1100
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(317) 879-1881 • fax: (317) 879-0563
editoraaoj@gmail.com
www.academyofosteopathy.org

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FORUM FOR OSTEOPATHIC THOUGHT
Official Publication of the American Academy of Osteopathy®

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The mission of the American Academy of Osteopathy is to teach, advocate, and research the science, art, and philosophy of osteopathic medicine, emphasizing the integration of osteopathic principles, practices, and manipulative treatment in patient care.

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IN THIS ISSUE:

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Quarter page (3.75" x 5")	$200	$190	$180
Classified	$1 per 7 characters		

AAO Calendar of Events

Mark your calendar for these upcoming Academy meetings and educational courses.

2015

July 3	AAO office will be closed in observance of Independence Day
July 11-12	AAO Board of Trustees' meeting—AAO office, Indianapolis
July 14-16	Annual meeting of the American Osteopathic Association's Board of Trustees—Fairmont Chicago, Millenium Park (The AAO will send a delegation.)
July 17-19	Annual meeting of the American Osteopathic Association's House of Delegates—Fairmont Chicago, Millenium Park (The AAO will send a delegation.)
July 17-18	AAO Osteopathic Education Service at the AOA House of Delegates' meeting—Fairmont Chicago, Millenium Park
July 24-25	Cranial: A Sutural Approach—Edward G. Stiles, DO, FAAO, and Charles A. Beck, DO, FAAO, program chairs—Pyramid Three, Indianapolis
August 7-8	AAO Education Committee's meeting—AAO office, Indianapolis
August 7-8	SAAO Executive Council's meeting—AAO office, Indianapolis
September 7	Labor Day—AAO office closed
October 15	AAO Board of Trustees' meeting, 9 a.m.—Hyatt Regency, Orlando, Florida
October 16	AAO Leadership Forum, 9 a.m.—Hyatt Regency, Orlando, Florida
October 17-19	AAO program at OMED: Osteopathic Considerations in Performing Arts Medicine—Sajid A. Surve, DO, program chair—Orange County Convention Center, Orlando, Florida
December 4-6	Peripheral Nerves: Lower Body—Kenneth J. Lossing, DO, program chair—Midwestern University/Arizona College of Osteopathic Medicine in Glendale

2016

March 12-15	Pre-Convocation course: Basic Visceral Course—Kenneth J. Lossing, DO, program chair—Rosen Shingle Creek, Orlando, Florida
March 13-15	Pre-Convocation course: Fascial Distortion Model—Treatment of the Upper Extremities, Lower Extremities, and Head Region—Todd A. Capistrant, DO, MHA, program chair—Rosen Shingle Creek, Orlando, Florida
March 16-20	AAO Convocation—Somatic Dysfunction and Emotional Well-being: An Osteopathic Approach to Mental Health—Millicent King Channell, DO, FAAO, program chair—Rosen Shingle Creek, Orlando, Florida
March 20-21	Post-Convocation Residency Program Directors' Workshop—Michael P. Rowane, DO, FAAO, program chair—Rosen Shingle Creek, Orlando, Florida
July 29-31	Walking Toward Health: New Evaluations of Gait—Edward G. Stiles, DO, FAAO, and Charles A. Beck, DO, FAAO, program chairs—Pyramid Three, Indianapolis
September 17-19	AAO Program at OMED—Daniel G. Williams, DO, program chair—Anaheim (California) Convention Center

View From the Pyramids

AAOJ Scientific Editor Brian E. Kaufman, DO, FACOI, FACP

Mark Twain is credited with saying, "Really great people make you feel that you, too, can become great."[1]

The world of osteopathic medicine is small by numbers. Separate out those clinicians who practice neuromusculoskeletal medicine and osteopathic manipulative medicine, and it becomes smaller still. But within those small numbers are many who inspire me to believe that I can also become great.

I would not be exaggerating if I described the osteopathic medical community, especially the Academy, as a family. We are genuinely affectionate in our greetings, passionate in our disagreements, and intensely proud and supportive of each other's achievements.

Our paths intertwine too frequently for the holding of lasting grudges and antagonisms, and there are too few of us for any hope for anonymity after committing egregious actions.

Who in our family can dispassionately reflect on the prominent osteopathic physician who made front-page news when he murdered his wife and then killed himself a few years ago?[2] Who wouldn't have reacted as I did after hearing a firsthand account of a male OMM fellow physically assaulting 2 female medical student colleagues and being allowed to graduate rather than tarnish the reputation of that future physician and the school that graduated him? And who isn't distressed when they hear of colleagues drawn into protracted legal battles that destroy foundations of mentorship? It is always this way when one of us falls. These kind of adverse events send ripples throughout our osteopathic family.

Each one of the above instances has left marks on our profession, regardless of our awareness or knowledge of the parties involved. In subtle and not-so-subtle ways, these transgressions are like cancers that threaten the health of our family. We must all be alert to the signs and be ready to help if given the opportunity to do the right thing. Every interaction with each other is a choice to create or destroy. I will always wonder whether I could have intervened sooner and saved some of my colleagues some misery. Let us show the same courage in pointing out injustice as we demonstrate when we applaud our heroes.

Speaking of heroes, the intimacy of our group affords us a front-row seat to witness our own when they soar to greatness.

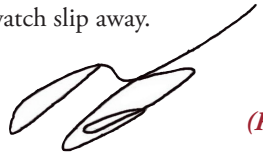
One individual who has served as an inspiration to both myself and others, who is well known to many in our profession and who has just been installed to lead the AAO as its president is Doris B. Newman, DO, FAAO.

Doris practices with the scientific substrate of her internal medicine training, and she uses that canvas to apply the art of neuromusculoskeletal medicine and osteopathic manipulative medicine. Her uniqueness is derived from the synthesis of these two disciplines and from the mentors and other teachers who inspired her along the way. I have watched as she easily conveyed complicated concepts of medicine in readily understandable ways that bespoke of her passion for education. I have been fortunate to call her a friend and colleague, and I was quite proud, but not surprised, to see Doris chosen as president of the Academy. She has worked hard and deserves the recognition and, more important, the opportunity to lead us.

Our profession is growing larger than many would have predicted. We are seeing the unification of our graduate medical education system with the allopathic GME system, and there are more osteopathic medical schools now than I can name. One in 4 graduates of US medical schools are now osteopathic physicians.[3] These are monumental accomplishments that I believe would make A.T. Still proud.

I would use this opportunity to call for us to maintain our unity and that which makes us great—our familial mindedness and our genuine belief that whatever our background or specialty, we are the same in our honor and love for the osteopathic principles that bind our community. I believe that as osteopathic physicians, we are held to higher standards than even our allopathic colleagues. We stand for something genuine and pure. I attend many conferences, but never do I have the feeling I get when at the Academy's annual Convocation: It is always like coming back home for the holidays.

"Courageous convictions will drag the dream into existence." These words from the song "Vital Signs" by Rush could have been uttered by A.T. Still himself. The dream is here, and it is ours to cherish and foster—or to watch slip away.



(References on page 24)

Cranial: A Sutural Approach

July 24-26, 2015 • The Pyramids, Indianapolis

Course Description

This introductory cranial course will focus on a biomechanical approach to cranial diagnosis and treatment that can be used to quickly and effectively treat patients for suture dysfunctions. Often when a key suture dysfunction is released, secondary sphenobasilar strain patterns resolve. This sequencing cranial approach has been effective in teaching osteopathic cranial manipulative medicine to osteopathic medical students, residents and practicing physicians. Unlike the membranous cranial approach, the suture approach is not hindered by suture dysfunctions. In addition, the suture approach can be integrated into a busy clinical practice. This course will address suture dysfunctions of the vault, base and facial bones.

Participants should have a basic understanding of osteopathic manipulative medicine prior to taking this course.

Program Chairs

As a student at what is now the A.T. Still University-Kirksville College of Osteopathic Medicine in Missouri, **Edward G. Stiles, DO, FAAO**, was introduced to the sutural strategy by George Andrew Laughlin, DO, a grandson of Andrew Taylor Still, MD, DO. Dr. Laughlin attended the first cranial course led by William G. Sutherland, DO. Dr. Stiles graduated from the Kirksville college in 1965 and worked in private practice in such places as Cambridge, Massachusetts, and Norman, Oklahoma. He has taught at the Oklahoma State University Center for Health Sciences College of Osteopathic Medicine, the Michigan State University College of Osteopathic Medicine and the University of Pikeville-Kentucky College of Osteopathic Medicine. Dr. Stiles has delivered the American Osteopathic Association's Andrew Taylor Still Memorial Address, as well as the Academy's Thomas L. Northup Lecture, its Scott Memorial Lecture and its Harold A. Blood, DO, FAAO, Memorial Lecture. Dr. Stiles also is a recipient of the Academy's highest award, the Andrew Taylor Still Medallion of Honor.

Like Dr. Stiles, **Charles A. Beck, DO, FAAO**, is board certified in neuromusculoskeletal medicine. He earned his doctor of osteopathic medicine degree from the University of Pikeville-Kentucky College of Osteopathic Medicine (UP-KYCOM). Dr. Beck has received many awards, including the Edward G. Stiles Award for Osteopathic Manipulation from UP-KYCOM, and he serves as an adjunct faculty member for several osteopathic medical schools, including the Lake Erie College of Osteopathic Medicine, the West Virginia School of Osteopathic Medicine, the Touro University College of Osteopathic Medicine and the Marian University College of Osteopathic Medicine. Dr. Beck is in private practice in Indianapolis at the Meridian Holistic Center.

Course Location

Pyramid Three (two buildings away from the AAO's offices)
3500 DePauw Blvd., lower level, Conference Rooms A and B
Indianapolis, IN 46268
(317) 879-1881, ext. 220

Travel Arrangements

Contact Tina Callahan of Globally Yours Travel at (800) 274-5975 or globallyyourstravel@cox.net.

Continuing Medical Education

24 credits of NMM- and FP-specific AOA Category 1-A CME anticipated. Please note that this course does not count as a 40-credit basic course in osteopathic cranial manipulative medicine.

Course Times and Meal Information

Friday, Saturday and Sunday from 8 a.m. to 5:30 p.m. Breakfast and lunch will be provided. Please contact AAO Event Planner Sherrie Warner with special dietary needs at (317) 879-1881, ext. 220, or SWarner@academyofosteopathy.org.

Registration Form

Cranial: A Sutural Approach

July 24-26, 2015

Name: _____ AOA No.: _____

Nickname for badge: _____

Street address: _____

_____

City: _____ State: _____ ZIP: _____

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By releasing your fax number and email address, you are giving the AAO permission to send marketing information regarding courses to you.

Click here to view the **AAO's cancellation and refund policy.**

Click here to view the **AAO's photo release statement.**

Registration Fees

Academy member in practice*	$1,016
Member resident or intern	$816
Nonmember health care professional	$1,216
Nonmember resident or intern	$1,016

** The AAO's associate members, international affiliates and supporter members are entitled to register at the same fees as full members.*

The AAO accepts check, Visa, MasterCard and Discover payments in U.S. dollars. The AAO does not accept American Express.

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I hereby authorize the American Academy of Osteopathy to charge the above credit card for the amount of the course registration.

Signature: _____

Register online at www.academyofosteopathy.org, or submit the registration form and payment by email to SWarner@academyofosteopathy.org; by mail to the American Academy of Osteopathy, 3500 DePauw Blvd., Suite 1100, Indianapolis, IN 46268-1136; or by fax to (317) 879-0563.

Thomas L. Northup Lecture

Are We Ready to Lead? ACGME Merger: An Opportunity to Fulfill Osteopathy's Mission

Judith A. O'Connell, DO, MHA, FAAO

Introduction

Imagine yourself in the late 1800s, when rudimentary knowledge of disease and health guides the healing arts, when bloodletting and cathartics are standard of care, and when sterile technique and anesthesia are in their infancy. It is a very difficult time. The country is ravaged by the Civil War, many citizens are dead or maimed, and the economy is depleted with the nation's industry in disarray.

In this crucible of need, Andrew Taylor Still, MD, DO, dared to imagine a system of health care focused on the patient and respectful of the body's innate ability to heal itself. He was ardent and steadfast in his desire to make this type of care available to the whole world.

Some called him a heretic. Some called him a genius. He listened to neither and set out to change the face of health care by offering to the world the science of osteopathy. The struggles and battles that he and his followers fought against great odds ensured for the generations to follow that osteopathy would provide a rational, patient-centered approach to finding health—because any fool could find disease.

Still's early followers were inspired by a rational philosophy. Armed with osteopathic principles that a body is a unified whole, that the body has an innate ability to heal, that structure and function are interdependent and interrelated, and that rational treatment is based on the above, these early osteopathic physicians began to affect medical treatment and education. Encouraged by a desire to relieve human suffering, they created hospitals and clinics, founded schools, and challenged mainstream medical teachings.

A firm commitment to the philosophy and principles of osteopathy guided the fight for practice rights, hospital privileges, and expansion of schools. When challenged by the need to reform medical education, the profession responded, making changes that strengthened our schools, and our growth continued.

Denied service as physicians during World War I, DOs provided care for Americans at home, strengthening their role in primary

Editor's note: Judith A. O'Connell, DO, MHA, FAAO, presented the American Academy of Osteopathy's 67th annual Thomas L. Northup Lecture on October 26, 2014, at the American Osteopathic Association's annual Osteopathic Medical Conference and Exposition in Seattle, Washington.

The Academy's 1992-93 president, Dr. O'Connell currently serves as the AAO's secretary-treasurer, an office first held by the late Thomas L. Northup, DO. Dr. O'Connell received the Academy's Andrew Taylor Still Medallion of Honor in 2008, exactly 60 years after Dr. Northup did.

Beyond the Academy, Dr. O'Connell serves as the AOA's adviser to the American Medical Association's Current Procedural Terminology, and she is a member of the AOA Bureau of Socioeconomic Affairs and the AOA Bureau of Osteopathic Specialty Societies.

Dr. O'Connell's lecture has been edited for publication in *The AAO Journal*. An audio recording of her presentation is available at 67th annual Thomas L. Northup Lecture.

Dr O'Connell is in private practice in Beavercreek, Ohio.

Financial disclosures: none reported.

Correspondence address:
Judith A. O'Connell, DO, MHA, FAAO
Pain Alternatives, Inc.
Beavercreek Health Center
2510 Commons Blvd, Suite 240
Beavercreek, OH 45431-3820

E-mail: joconnelldo@sbcglobal.net

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For more information on terminology used in *The AAO Journal*, see the

Glossary of Osteopathic Terminology

developed by the American Association of Colleges of Osteopathic Medicine's Educational Council on Osteopathic Principles.

Judith A. O'Connell, DO, MHA, FAAO (left), accepts from 2014-15 AAO President-elect Doris B. Newman, DO, FAAO, a plaque for presenting the Academy's 2014 Thomas L. Northup Lecture.

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care. Osteopathic care saved many lives during the 1918 influenza epidemic. Persistence in the fight for recognition as commissioned officers in the military ended successfully in 1966, and in 1997, the first "osteopathic" surgeon general of the US Army was named.

There have been challenges that threatened our survival throughout the years, yet each time, we rose up to meet them. We have changed, been innovative and continued to expand, all the while being guided by osteopathic principles and philosophy.

Our Uniqueness

We have been gradually affecting medical thought and care just as Still intended. I just received a link to the "Health Is Primary" campaign of Family Medicine for America's Health, a collaboration of 8 family medicine organizations, including the American College of Osteopathic Family Physicians. "Health Is Primary" is a communications campaign aimed at building a primary care system that reflects the values of family medicine, puts patients at the center of their care, and improves the health of all Americans.[1] Now that sounds familiar. Dr. Still must be smiling!

The osteopathic medical profession has now reached a critical mass that makes our contributions more overt. But with the expansion of our numbers comes challenges to finding enough residencies for our graduates.

A large number of our graduates are trained in residency programs accredited by the Accreditation Council for Graduate Medical Education (ACGME), and osteopathic medical colleges rely on ACGME programs to accept DO graduates. There is no clear line of distinction in graduate medical education (GME) anymore. Pressures to expand the health care workforce will fuel further increases in medical school graduates and the demand for quality postdoctoral training slots. Our students must be able to compete for and have access to those spots.

The ACGME is working with the American Osteopathic Association (AOA) and the American Association of Colleges of Osteopathic Medicine (AACOM) to establish a single GME-accreditation system. With this new pathway before us, our resolve to preserve our uniqueness is challenged. What is this uniqueness? Is it osteopathic manipulative treatment (OMT)? Is it primary care? Is it our DO degree?

Our uniqueness resides in our philosophy and principles. It is the way we practice. It is our focus on the whole and not just the pieces. It is our respect for the body's innate tendency toward health. It is in our understanding that physicians don't heal patients, patients heal themselves.

After his 26 years as the AOA's editor in chief, George W. Northup, DO, FAAO, wrote an editorial for *The Journal of the American Osteopathic Association's* September 1988 issue titled "Mission Accomplished?" in which he reminded us that our mission is not finished and that there is much more to be done. He was writing at

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a time when interest in manual medicine was being reinvigorated and a renaissance was occurring in developing OMT techniques. He warned that we must not marginalize OMT, as it is one piece of osteopathic medicine, and that we must not conclude that the general acceptance of hands-on approaches means our mission is done.

Northup wrote that from the beginning, osteopathic philosophy was meant for all of medicine as a means of improving health care. He argued that our philosophy carries with it great responsibility and that we are challenged to live up to that responsibility. Northup discussed our mission and called our attention to the words of our founder in his book *The Philosophy of Osteopathy,* "[Still] stated his desire was '…to give the world a *start* in a philosophy that *may* be a guide to the future.' "[2]

This philosophy, *our* philosophy, lights the way in our quest for health. This is our mission. It is one of evolution, and it is never ending.

I wish to expound a bit on Northup's observations. Still spoke often of the truth of osteopathy in a sacred way. He spoke of how the whole of creation was explained to him in the science of osteopathy. He recognized that the philosophy he was presenting was powerful and transformative enough to risk his reputation in ensuring it was taught and transmitted to future generations.

The purpose of his zeal was not to memorialize himself but to improve health care through an evolution of thought. Still entrusted his philosophy and its principles to his followers, and he gave them the responsibility to "keep it pure" and to spread the work. This responsibility has been faithfully transmitted from one generation of osteopathic physicians to the next, inciting innovations in education, research, and patient care.

Osteopathic philosophy is a gift, a truth, and a companion on the road to enlightenment. It comes with a great responsibility to ensure it is disseminated and applied for the benefit all people. It is an evolution designed to transform medical thought and care.

Our Vision

Recently, my hospital was asked to produce a vision statement that was in concert with our multihospital network's vision. The network is evaluating long-range strategies and structure. One piece of this realignment strategy is to bring the component hospitals together under a common vision while recognizing and exploiting the unique contributions each hospital offers.

The hospital's president wrote a vision statement and brought it to the medical executive committee (MEC) for comment. The collective reaction of the MEC was that the president had missed the mark. He had described the services we offer but not who we are. After great discussion, the president and the MEC decided to have a visioning session, complete with a moderator skilled in such endeavors.

We engaged physician leaders, staff members, nurse managers, administrators, and a representative for our governance team in this visioning session. *It was osteopathic magic!* Here was a diverse group of DOs from different disciplines, an MD department chair who fully admitted to being a DO wannabe, nurse managers, administrators, and even a hospital board member and businessman coming together to create our vision statement. There was no contentious discussion. There was a love fest!

I saw a pride expressed by colleagues I had not seen before. I saw respect for OMT and recognition that it is a part of a much grander whole. I saw in that one night a crystallization of thought and a community discussing like a family. What emerged was a vision firmly based in osteopathic philosophy and principles.

Still did well. Osteopathic philosophy and principles are woven into the fabric of our physicians. They attract admirers and imitators. And they affect those we work with.

Three of us—2 physicians and 1 administrator—met with the president of the network to present our vision. After we presented the vision and outlined our sense of how it resonates with the network's vision, she asked us why we should remain in the network. Seeing our surprise, she added that she had never dealt with an osteopathic hospital before and that she needed to know who we are and how we differ. Her previous experiences led her to believe that minority groups tend to be insular and self-serving, and she was trying to create a cohesive team of hospitals.

Our delegation gave her a mini-lecture on osteopathic philosophy and principles and our hospital's historical excellence through its education mission. We drew her attention to our graduates who are sprinkled throughout the network, the state, and the nation. We explained how our physicians are involved in network-level activities and offer leadership in quality and information technology. We noted that our staff members are contributing to state, specialty, and national organizations—often in leadership positions.

After asking for some clarification, she announced to us, "You are what health care is looking for right now, and you don't need a culture change to get there!"

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Her observation surprised me. It was correct, of course, but it still surprised me. During that brief discussion of osteopathic philosophy and our principled approach to health and disease, she came to understand our very core. She understood that our founding principles continue to guide us—not wishing to be separate but endeavoring to improve the whole of medicine. Our mission was revealed!

This story illustrates how osteopathic philosophy has created for us a society. To belong, you must acknowledge our founding principles and express them throughout your career and life. Norman Gevitz, PhD, speaks about this often.

But we are not just a social movement that is here to incite change and then fade away. We have a mission that perpetuates our motion, and as Northup pointed out, that mission has no end as it continually points to the future.

We are change agents—sometimes overtly and sometimes in the shadows. We are always motivated to complete the mission of seeking health, ever evolving, focused on improving health care, and standing firm on our principles.

We feel comfortable in our shared philosophy, and we come together as a family. Our culture has identifiable and teachable knowledge and values that are recognized by those outside of our group. Our society is recognized by our culture, which is based on expressing founding principles that demonstrate attitudes and behavior that are characteristic of our organization. We are on a mission!

Just as the president of the network did at my hospital, the single GME-accreditation pathway begs us to answer these questions: Who are we? What is our vision? And how do we contribute to the whole of medicine?

Who Are We?

Earlier in this lecture, we discussed our mission to continually seek health and our collective activities in affecting health care and education. Now, we need to figure out who we are.

In my observations throughout my mere 30-plus years of practice, I have identified some of our characteristics, and I would like to share them with you. See if they fit.

We are innovators. We are the only truly American model of medicine. We are helping to shape health care policy. We are educators.

We are a *family* of primary care physicians and specialists. We are a patient-centered medical home. We are the fastest-growing health care profession in America. We are primary care oriented in our education and in our members.

We are providing patient-centered holistic care to patients who are both urban and rural and who are both privileged and disadvantaged, and we are doing so in medical centers and in private offices throughout America.

We are what America needs today to fuel a paradigm shift away from disease-focused, specialty-driven medicine to osteopathic medicine's focus on health through coordinated care between primary care physicians and specialists.

We are already there.

We are a fully developed philosophy of health care, polished in the fiery crucible of adversity and always embracing health as the goal with the patient at the center.

As a profession, we have a legacy of protecting and promoting the osteopathic philosophy of health care through our educational institutions, our practicing physicians, and our advocacy efforts.

The single GME-accreditation pathway provides new challenges that open the door to great opportunities for us to impact the house of medicine. It will allow us to secure access to all GME. It will allow the profession to maintain osteopathically aligned programs. It will give allopathic graduates access to osteopathic-focused residency programs, further disseminating osteopathic philosophy. It will strengthen osteopathic GME.

It will allow for cross-fertilization of thought and process, giving osteopathic medicine a broader audience and a level playing field. It will allow the AOA and AACOM to have members on the ACGME Board of Directors, providing the osteopathic medical profession with avenues of influence and respect as GME is built into the future.

The single GME pathway is the next step in satisfying the mission that Still set us on to transform health care.

The discussion on the single GME pathway has spawned a renewal in osteopathic pride. It has awakened a sense of allegiance to osteopathic philosophy. It has renewed a sense of accomplishment. It has shaken the dust off of our memories and has incited osteopathic storytelling. It has reconnected us with our past, and it

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supports a yearning for inclusiveness. It has awakened our sense of responsibility and mission.

Conclusion

Imagine a system of health care that integrates osteopathic concepts, philosophy, and principles to improve the health and well-being of all patients—a system that guides an evolution throughout the whole house of medicine that results in improved quality of life and health throughout the world.

The time is now to take hold of the vision and act. We stand on the shoulders of greats who prepared the way for this moment in time. It is our destiny.

Do we have the courage to continue to embrace osteopathy's mission? Are we ready to embrace the responsibility and engage the opportunities and challenges that osteopathic philosophy and its mission place before us?

Still and the unbroken chain of osteopathic physicians who stretch through time from him to you want to know: Are you ready to lead?

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Osteopathic Manipulative Treatment for Patient With Severe Nausea and Vomiting in Pregnancy: A Case Study

Katherine Anne Markelz, OMS IV, and Janice Upton Blumer, DO

Abstract

A 27-year-old white female patient with unremarkable medical history who was experiencing her first pregnancy visited an osteopathic manipulative medicine clinic complaining of 8 weeks of progressively worsening severe nausea and vomiting in pregnancy (NVP). An osteopathic structural examination revealed multiple areas of somatic dysfunction, including cervical, thoracic, pelvic, and cranial diaphragms. Osteopathic manipulative treatment (OMT) was performed based on somatic dysfunction, after which the patient reported resolution of nausea and vomiting. Based on the Pregnancy-Unique Quantification of Emesis and Nausea (PUQE) index and the patient's Hyperemesis Impact of Symptoms Score (HISS), the patient reported 50% and 41% decreases of nausea and vomiting, respectively, after the first treatment and 58% and 68% overall decreases, respectively, after the second treatment. This case study suggests that OMT is a valuable treatment for patients with severe NVP.

From the Western University of Health Sciences College of Osteopathic Medicine of the Pacific-Northwest in Lebanon, Oregon

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Correspondence address:
Katherine A. Markelz, OMS IV
200 Mullins Dr
Lebanon, OR 97355

E-mail: kmarkelz@westernu.edu

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Keywords

osteopathic manipulative treatment, hyperemesis, nausea, pregnancy, diaphragm, adjunct therapy

Introduction

In the United States, nausea occurs in up to 70% of women during pregnancy. While not well documented, severe nausea and vomiting occur in up to 1.3% of patients who are pregnant.[1]

Severe nausea and vomiting in pregnancy (NVP) can negatively impact both the mother and the child. Mothers often admit to a lower perceived quality of life and a depressed or anxious mood. In a cohort of women with moderate to severe NVP, 47% reported possible anxiety, 11.4% were depressed in the last week of pregnancy, and 36% had a history of depression.[2] During pregnancy, patients may suffer from dehydration, electrolyte imbalances, malnutrition, and anorexia. If severe enough, hyperemesis may cause preterm delivery, low birth weight, low 5-minute Apgar scores, and fetal or congenital anomalies.[3]

The mainstay of treatment for patients with NVP is supportive and pharmacologic therapies. Initial therapy often involves dietary modifications, trigger avoidance, acupressure, and complementary alternative medications such as ginger and vitamin B_6. Acupressure has not been demonstrated to have significant efficacy compared to sham treatment for pregnant women with severe NVP.[4] Some small studies have shown reduction of symptoms in NVP with ginger compared to placebo, but such evidence is limited.[4]

Primary pharmacologic therapy includes doxylamine succinate (10 mg) and pyridoxine hydrochloride (10 mg).[5] Secondary therapy includes antihistamines, metoclopramide, ondansetron hydrochloride, phenothiazines, and corticosteroids, provided patients are past the first trimester. However, these treatments have limited efficacy, and they are further limited by adverse effects. Antihistamine use is often limited by sedation, especially in high doses. Metoclopramide increases the risk for tardive dyskinesia and serotonin syndrome. Odansetron has been associated with increasing the interval between the Q and T waves on electrocardiograms, and current investigations are studying whether

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odansetron poses risks for birth defects such as cleft palate.[6] Pregnancy categories range from B to C for the aforementioned therapies.

To date, little attention has been given to the musculoskeletal manifestations of NVP. It is well known that pregnant women undergo many structural changes. These include ligamentous laxity, thoracic and pelvic diaphragm dysfunction, and passive tissue congestion. Often women are able to compensate for these changes by modifying their posture or their daily activity. However, when these patients' structural integrity is stressed by repetitive, forceful vomiting, their compensatory patterns are easily altered, causing somatic dysfunction. The case presented here exemplifies how such somatic dysfunction may perpetuate clinical symptoms in NVP, especially as pertains to the neurological, respiratory and circulatory models.[7]

Report of Case

History of Present Illness

A 27-year-old white female patient experiencing her first pregnancy visited an osteopathic manipulative medicine clinic complaining of severe nausea and vomiting. The patient was approximately 14 weeks pregnant, and she had experienced an overall weight loss of 5 lbs. In the initial interview, the patient described her nausea as a 9 on a 10-point scale, and she reported vomiting throughout the previous night. The patient also reported difficulty falling asleep and excessive sleepiness after waking (initial and terminal insomnia).

The patient stated that she had been struggling with nausea and vomiting since week 6 of her pregnancy. The episodes began once per day, but by 8 weeks, she was vomiting 7 to 10 times per day. The patient stated that she "could not keep anything down, not even water." By 8 weeks, she had lost 5 lbs. On the recommendation of her obstetrician, she tried the natural remedy ginger, but it did not relieve her symptoms.

When she was 11 weeks pregnant, the patient sought pharmaceutical therapy. She received a prescription for 2 delayed-release tablets of the combination of doxylamine succinate (10 mg) and pyridoxine hydrochloride (10 mg) daily at bedtime for 3 weeks. At the same time, the patient began taking 4 mg of ondansetron orally in the morning and at bedtime. This protocol allowed her to tolerate crackers, cereal, soup, salad, and broth, and she began gaining weight.

At week 12, the patient began taking Unisom to relieve insomnia. With this pharmacologic intervention, she was able to sleep for 7 to 8 hours each night, averaging 1 waking episode per night.

The Pregnancy-Unique Quantification of Emesis and Nausea (PUQE) index and the Hyperemesis Impact of Symptoms score are two validated clinical tools for assessing the severity of NVP and

(continued on page 15)

Continuing Medical Education Quiz

The purpose of the June 2015 quiz—found on page 19—is to provide a convenient means of self-assessing your comprehension of the scientific content in the article "Osteopathic Manipulative Treatment for Patient With Severe Nausea and Vomiting in Pregnancy: A Case Study" by Katherine Anne Markelz, OMS IV, and Janice Upton Blumer, DO.

Be sure to answer each question in the quiz. The correct answers will be published in the next issue of the *AAOJ*.

To apply for 2 credits of AOA Category 2-B continuing medical education, fill out the form on page 17 and submit it to the American Academy of Osteopathy. The AAO will note that you submitted the form and forward your results to the American Osteopathic Association's Division of Continuing Medical Education for documentation. You must score a 70% or higher on the quiz to receive CME credit.

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(continued from page 14)

hyperemesis gravidarum, respectively. The PUQE score focuses on physical symptoms, while the HISS assesses psychosocial impact in addition to physical symptoms.[8,9] During the patient's initial interview, she scored 12 out of 15 on the PUQE index and 17 out of 30 on the HISS.

Up to this point in her pregnancy, the patient had not received manipulative care.

Patient History

The patient reported a predisposition to dehydration and heat stroke as a young child. The patient reported no other significant medical history. Past surgical intervention was limited to removal of third molars. Regular medication included prenatal vitamins. The patient has a family history of morning sickness (mother) and gestational hypertension (sister). There is no family history of diabetes mellitus. The patient lives with her husband, and she reported having a healthy, well-balanced diet and exercising regularly prior to the onset of NVP. The patient denied using tobacco products and alcohol.

Review of Systems

A review of the patient's systems uncovered generalized fatigue, tension headaches, and constipation. The patient denied having muscle weakness, chest pain, shortness of breath, and depression. All other systems were negative.

Physical Examination

The 27-year-old female patient weighed 140 lbs, and she was 5 ft tall. She was well nourished and well dressed, and she was not in acute distress. She was alert, oriented, and cooperative. She appeared fatigued and was hunched over in discomfort. Her pupils were equally round and reactive to light. Extraocular movements were intact. A cardiovascular examination revealed normal pulses and good capillary refill. A respiratory examination showed good inspiratory effort. The patient's gravid abdomen was appropriate to her due date. Cranial nerves II-XII were grossly intact bilaterally. No sensory or motor deficits were present. The patient exhibited a steady gait with normal heel-to-toe strike and smooth, coordinated turns. A Romberg test was negative.

A musculoskeletal examination showed full range of motion with good tone and without tenderness in the upper and lower extremities bilaterally. Osteopathic somatic dysfunction was as follows:

- Cranial: Internal rotation of bilateral temporal bones with decreased cranial rhythmic impulse (CRI).
- Cervical: Occipito-atlantal joint flexed, sidebent right (sideslip right), rotated left.
- Suboccipital: Generalized hypertonicity, fourth cervical vertebrae flexed, rotated right, sidebent right (sideslip right).
- Thoracic: T1-4 and T8-9 hypertonicity in bilateral paravertebral muscles, thoracic diaphragm and thoracic inlet exhalation somatic dysfunctions (restricted in inhalation).
- Pelvic: Left anteriorly rotated innominate, exhaled pelvic diaphragm.
- Sacral: General reduced motion and bilaterally flexed sacrum.

Assessment

A 27-year-old white female with worsening severe nausea and vomiting during her first pregnancy had somatic dysfunctions of the cranial, cervical, suboccipital, thoracic, pelvic, and sacral regions.

Treatment

The patient was treated supine for the duration of the session (see *Table*). Her cranium was treated with balanced membranous tension (BMT) technique. Cervical treatments included atlanto-occipital decompression, fourth cervical vertebrae high-velocity/

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Table. *The table below summarizes the structural diagnoses made and the osteopathic manipulative treatment techniques performed on the patient's first visit.*

Osteopathic Exam and OMT Technique		
Region	**Diagnosis**	**Technique**
Cranium	Internal rotation of temporal bones and cranial extension somatic dysfunction	Balanced membranous tension
Cervical	C4 FR_RS_R, OA FR_LS_R, B/L suboccipital hypertonicity	High-velocity/low-amplitude to C4, balanced ligamentous tension, and suboccipital myofascial release
Thoracic	Thoracic inlet ESD, thoracoabdominal diaphragm ESD, and B/L hypertonicity (T1-4 and T8-9)	Balanced membranous tension
Pelvis	Pelvic diaphragm ESD	Lymphatic pelvic diaphragm release

C=cervical , F=flexed, R=rotated, S=sidebent, OA=occipito-atlantal joint, B/L=bilateral, ESD=exhalation somatic dysfunction, T=thoracic.

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low-amplitude technique, and suboccipital release. The patient's thoracic inlet and thoracoabdominal diaphragm were treated with BMT technique and myofascial release. The pelvic area was addressed with lymphatic pelvic diaphragm release bilaterally. The treatment concluded with an expansion of the fourth ventricle (EV4) technique.

Follow-up

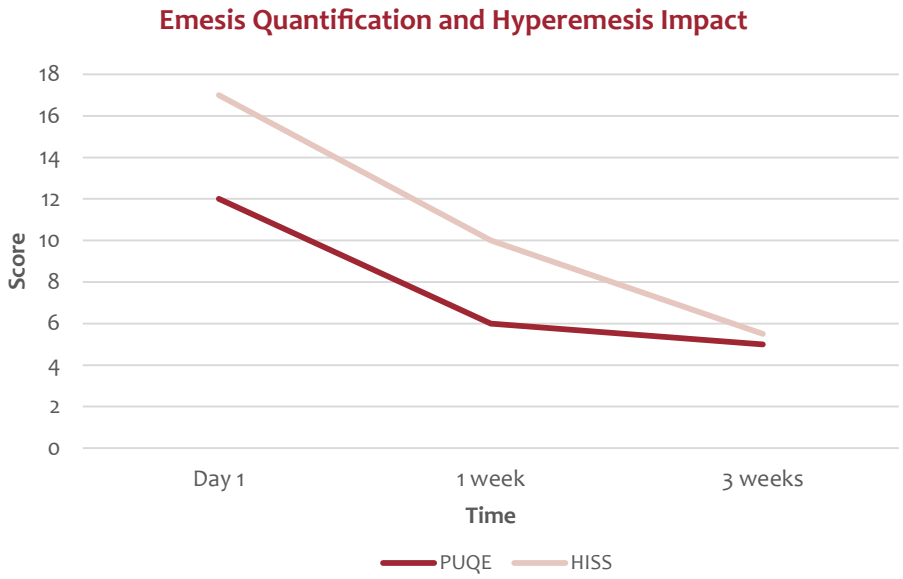
At a follow-up visit 1 week after treatment, the patient reported that her initial nausea tapered off for 4 hours following treatment. The patient said that she "settled into her own body." Although she was still taking ondansetron hydrochloride, she began to question whether she needed it. Between the initial treatment and the follow-up visit, she found she could go 3 to 4 hours in the morning without taking ondansetron hydrochloride.

The patient reported a significant increase in food intake 2 days following treatment. She dined out and ate items such as hummus, pita bread, hash browns, and eggs without vomiting. At the time of the follow-up visit, the patient had not vomited since the initial treatment. She continued to have bouts of nausea, but the severity decreased to 1 on a 10-point scale.

In addition, the patient's activity level increased substantially. Two days after treatment, the patient traveled 90 minutes to Portland, Oregon, and walked around the city.

The patient also reported dramatically improved sleep. Following treatment, she was able to sleep 12 hours per night without waking.

Figure. *The figure below shows the trend of the Pregnancy-Unique Quantification of Emesis and Nausea (PUQE) index and the Hyperemesis Impact of Symptoms score (HISS) throughout the patient's osteopathic care.*



The patient continued using Unisom regularly.

At the 1-week follow-up visit, the patient scored 6 out of 16 on the PUQE index and a 10 out of 30 on HISS.

On second examination, the patient was smiling, talkative, well nourished, and well dressed, and she was not in acute distress. Although a physical examination revealed no significant change in findings, an osteopathic examination revealed improvement of somatic dysfunction as follows:

- Cranial: Good CRI throughout. Temporal restriction resolved.
- Thoracic: Hypertonicity of paravertebral musculature L>R, T1-T4. Hypertonicity bilateral (B/L) thoracolumbar junction, R>L.
- Pelvic: Inhalation somatic dysfunction of the pelvic diaphragm on the left. Exhalation somatic dysfunction of the pelvic diaphragm on the right.

Treatment consisted of BMT of the thoracic inlet and thoracoabdominal diaphragm, as well as lymphatic pelvic diaphragm release. Lastly, EV4 technique was performed.

At a follow-up visit 3 weeks after her first treatment, the patient reported she had tapered her use of ondansetron hydrochloride from 2 mg to 1 mg 2 days after the last treatment, and she reported infrequent nausea. The patient reported a total of 2 episodes of vomiting since her first treatment. Both episodes occurred in the evening on days in which the patient reported having overexerted herself at work. The patient reported less impairment after vomiting, without experiencing shaking or systemic fatigue as with prior episodes.

At the 3-week follow-up visit, the patient scored 5 out of 16 on the PUQE index and 5.5 out of 30 on HISS (see *Figure*).

The patient reported that her constipation had completely resolved following her second treatment. In addition, although she had occasional tension headaches, they quickly resolved with water intake.

Following the initial treatment, the patient continued taking Unisom for sleep, and she regularly slept 10 to 11 hours overnight without nighttime awakenings.

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Discussion

This case illustrates the benefits of osteopathic manipulative treatment (OMT) for women with NVP. Two 30-minute treatment sessions were associated with dramatically reduced symptoms and improved quality of life.

When caring for patients with NVP, the first model to consider is the neurologic model, which explains the connection between structure and neurologic function. In the upper gastrointestinal system, parasympathetic vagal afferents are responsible for carrying information about gastric electromechanical events to the area postrema and nucleus tractus solitarius. These areas interpret sensations as either normal or symptomatic, the latter of which may cause nausea. Sympathetic afferents mediate nociceptive stimuli and travel to the hypothalamus, where antidiuretic hormones and corticotropin-releasing hormones can be released. These hormones can then activate a vomiting reflex.[11]

In this case, the authors postulate that somatic dysfunction and neurological function were intimately related. The patient's somatovisceral reflex appears to have been that somatic dysfunction altered her neurological input, output, and reflexes, thus perpetuating her nausea and vomiting. As seen in this case, vomiting often leads to compression of the cranial base, resulting in impingement of the vagus nerve. This compression or impingement can lead to ineffective closure of the lower esophageal sphincter.

Additionally, increased tissue texture variations in the fascia and connective tissue surrounding neural bundles, such as the celiac ganglion, can alter neural signaling. This alteration may lead to improved function throughout organ systems and, ultimately, decreased pain.[12]

In our patient's case, BMT applied to the suboccipital and thoracoabdominal diaphragm contributed to decreased nausea and vomiting. We hypothesize that this was in part secondary to facial and connective tissue relaxation and unwinding that resulted in a more balanced neural input to the epigastric region. The patient's hypertonicity in the suboccipital region B/L was likely a manifestation of the parasympathetic component (occipito-atlantal joint, atlanto-axial joint) of a gastroesophageal viscerosomatic reflex, while her hypertonicity at T8-9 was likely a manifestation of the sympathetic component (T6-10) of the same gastroesophageal viscerosomatic reflex.[7,13]

After considering the neurologic model, it is important to consider the respiratory and circulatory models. The body has 8 diaphragms, 7 of which serve as transition zones in a transverse plane parallel to the thoracoabdominal diaphragm. Ideally, these diaphragms work in synchronization, propelling circulatory and interstitial fluid throughout the body. Sometimes the diaphragms can become tight or restricted, which can lead to diaphragms being out of phase with one another or becoming restricted in the exhalation or inhalation phase of respiration. With emesis, fluid is forced upward from the stomach, up the esophagus, and out of the body. This repetitive, forceful superior vector often causes exhalation somatic dysfunction in transition zones. The authors hypothesize that this is what the patient in this case experienced. By individually addressing each major diaphragm, the authors were able to offer significant relief.

The mechanism contributing to NVP is twofold. First, decreased arterial flow to the tissue limits the delivery of nutrients. Second, stagnancy in lymphatic and venous return results in the buildup of metabolic waste products, which can manifest as pain and discomfort. In this case, the buildup manifested as nausea and vomiting. Using OMT to remove these obstructions to flow restores hemodynamics.[14,15]

By addressing the neurologic, respiratory, and circulatory models with OMT, the authors helped resolve the patient's symptoms and encouraged her body's inherent ability to heal itself.

Conclusion

Severe NVP negatively impacts women's physical, psychological, and social well-being. Currently, there are limited safe and effective treatment options for these patients. Osteopathic manipulative treatment may be an additional treatment that will benefit standard treatments such as pharmacological and supportive care for patients with severe NVP.

The patient in this case did not meet the Fairweather's criteria for hyperemesis gravidarum,[10] which include ketonuria and severe electrolyte disturbances requiring hospitalization. But several of her symptoms, including severe vomiting, weight loss, and disability, are associated with hyperemesis gravidarum. Therefore, the authors believe this treatment protocol would benefit patients with hyperemesis gravidarum as well.

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Author: Katherine Anne Markelz, OMS IV, and Janice Upton Blumer, DO

Publication: *The AAO Journal*, Vol. 25, No. 1, June 2015, pages 13-15, 17, 18, 24

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Complete the quiz to the right by circling the correct answers. Send your completed answer sheet to the American Academy of Osteopathy. The AAO will forward your results to the American Osteopathic Association. You must answer 70% of the quiz questions correctly to receive CME credit.

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1. Typical initial treatment for patients with severe nausea and vomiting in pregnancy (NVP) does not include:
   a. acupressure
   b. dietary modifications
   c. exercise
   d. alternative medications such as ginger and vitamin B_6

2. Recommended pharmacotherapy to treat patients with NVP does not include:
   a. antihistamines
   b. bupropion
   c. corticosteroids
   d. metoclopramide

3. Metoclopramide increases the risk for tardive dyskinesia and serotonin syndrome.
   a. true
   b. false

4. In this case, osteopathic manipulative treatment included:
   a. balanced membranous tension
   b. high-velocity/low-amplitude
   c. suboccipital myofascial release
   d. all of the above

Answers to *The AAO Journal's* Winter 2014 quiz:

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

Answers to the *AAOJ's* June 2015 CME quiz will appear in the next issue.

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Role of Osteopathic Manipulative Treatment in a Dynamic Case of Parkinson Disease and Levodopa-Induced Dyskinesia: A Case Report

Theresa E. Apoznanski, OMS IV, and Theodore B. Flaum, DO, FACOFP

Abstract

Levodopa-induced dyskinesia (LID) is a hyperkinetic movement disorder that may develop in patients with Parkinson disease (PD) after prolonged use of levodopa. Dyskinesia can manifest in virtually any area of the body, and it often presents as choreas or dystonias. Pharmacologic treatment is limited, and thus prevention and early detection are critical. An 81-year-old man visited the New York Institute of Technology College of Osteopathic Medicine's clinic with orofacial symptoms of LID and with worsening symptoms of PD, including tremors, imbalance, and memory deficits. Osteopathic manipulative treatment (OMT) was performed during 4 visits, during which orofacial LID symptoms, balance, and mobility improved. The authors postulate that OMT addresses the cranial strain patterns, blood supply insufficiencies, and nervous system output that may contribute to LID symptoms and to PD-related motor and balance deficits. As a consequence, the authors propose that OMT should be considered part of a comprehensive treatment plan for PD patients with LID. A literature review on the role of OMT on LID and balance and on gait in PD was performed.

From the New York Institute of Technology
College of Osteopathic Medicine in Old Westbury

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Correspondence address:
Theodore B. Flaum, DO, FACOFP
Assistant professor of osteopathic manipulative medicine
New York Institute of Technology
College of Osteopathic Medicine
Serota Building, Room 128
Northern Boulevard
Old Westbury, NY 11535

E-mail: tflaum@nyit.edu

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Introduction

Parkinson disease (PD) is a progressive neurodegenerative disease affecting 5 million people worldwide.[1] It is associated with deterioration of dopaminergic neurons, which affects the neurological pathways to the thalamus and motor cortex, resulting in the parkinsonian signs of bradykinesia, tremor, postural instability, and rigidity.[2] The most effective treatment to delay the progression of symptoms is levodopa.[3] Levodopa-induced dyskinesia (LID) is a distinct hyperkinetic movement disorder that may develop as a side effect of prolonged use of levodopa by patients with PD. LID affects the face, trunk, or extremities, and it manifests most often as choreas and dystonias.[3] LID is distinct from tardive dyskinesia (TD), which has similar symptoms but results from prolonged used of certain antipsychotics.

The pathogenesis of LID is not completely understood, but LID is most likely caused by dysregulation of the cortical input and output of the basal ganglia. Specifically, the loss of dopamine in the substantia nigra causes disinhibition of the primary motor cortex, resulting in increased glutaminergic outflow and thus excessive movements (see *Figure*, page 22). LID only occurs in patients with PD.[3] Levodopa therapy is thought to further alter outputs from the basal ganglia in a way that promotes dyskinesia. Risk factors for developing LID include high levels of levodopa therapy, long-term levodopa use (12 months or more), and young-onset PD (before age 50).

Treating patients for LID is difficult, and it often involves lowering the dosage of levodopa, which may subsequently worsen PD symptoms. Therefore, the best strategy is careful monitoring by physicians, caregivers, and patients to identify symptoms of LID early.[3]

Although a literature review on the role of osteopathic manipulative treatment (OMT) in treating patients with LID yielded minimal

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results, a single case report was found on the role of OMT in alleviating pain associated with TD.[4] That case report suggested that soft tissue techniques and cervical and thoracic high-velocity/low-amplitude (HVLA) techniques improved somatic dysfunctions and reduced pain. Additionally, the subject of that case report noted improved sleep, concentration, and mood. Although LID is not equivalent to TD, we found similar improvement in our patient's overall well-being after he received OMT.

LID often manifests when PD symptoms are worsening and, consequently, the dosage of levodopa needs to be increased. Increased levodopa dosage is associated with initiating and worsening LID symptoms, while dosage reductions lead to poor control of PD. In this complex clinical situation, OMT offers an alternative means of managing patients' symptoms and somatic pains from both LID and PD.

Report of Case

An 81-year-old man visited the New York Institute of Technology College of Osteopathic Medicine's clinic with orofacial symptoms of LID and with worsening symptoms of PD, including tremors, imbalance, memory deficits, muscle "freezing," and muscle pain. His medical history included arthritis, prostate cancer, urinary incontinence, low blood pressure, and implantation of a pacemaker.

The neurologist who was monitoring the patient's PD medications and symptoms increased the dosage of the combination of carbidopa and levodopa 5 months previously. The patient subsequently experienced a period of decreased cognition, several falls, and the onset of orofacial LID symptoms. His dosage was subsequently adjusted. Although he fell less frequently, his orofacial LID symptoms persisted. LID symptoms manifested as orofacial dyskinesia and mouth twitching during waking hours.

An osteopathic structural exam revealed right sidebending and a rotation cranial strain pattern; C4-C6 flexed, rotated, and sidebent left; L4-L5 extended, rotated, and sidebent left; bilateral first rib inhalation dysfunctions; left anteriorly rotated innominate; and posterior sacrosciatic ligament restriction.

OMT was performed using cranial manipulation, parietal lift, CV4, occipito-atlantal (OA) release, facilitated positional release to the cervical spine, balanced ligamentous tension to the lumbar spine, muscle energy to the pelvis, myofascial release to the first ribs, and mediastinal fascial release.

The patient returned to the clinic for follow-up 7 days after his initial treatment. He reported having a mild headache after the first treatment that resolved on its own and had not returned. Both the patient and his wife noted a dramatic improvement in mobility, stability, and balance. The patient stated he was more confident with walking. Several somatic dysfunctions were found in regions similar to the previous visit, but the cranial strain pattern had resolved. A new right OA compression was treated with myofascial release.

During the patient's third visit 14 days after the initial treatment, the patient's wife noted that the "mouth twitching" had resolved. The patient's dosage of the carbidopa-levodopa combination had been decreased between visits, but the wife, who is a licensed psychologist, noted that the orofacial dyskinesia subsided prior

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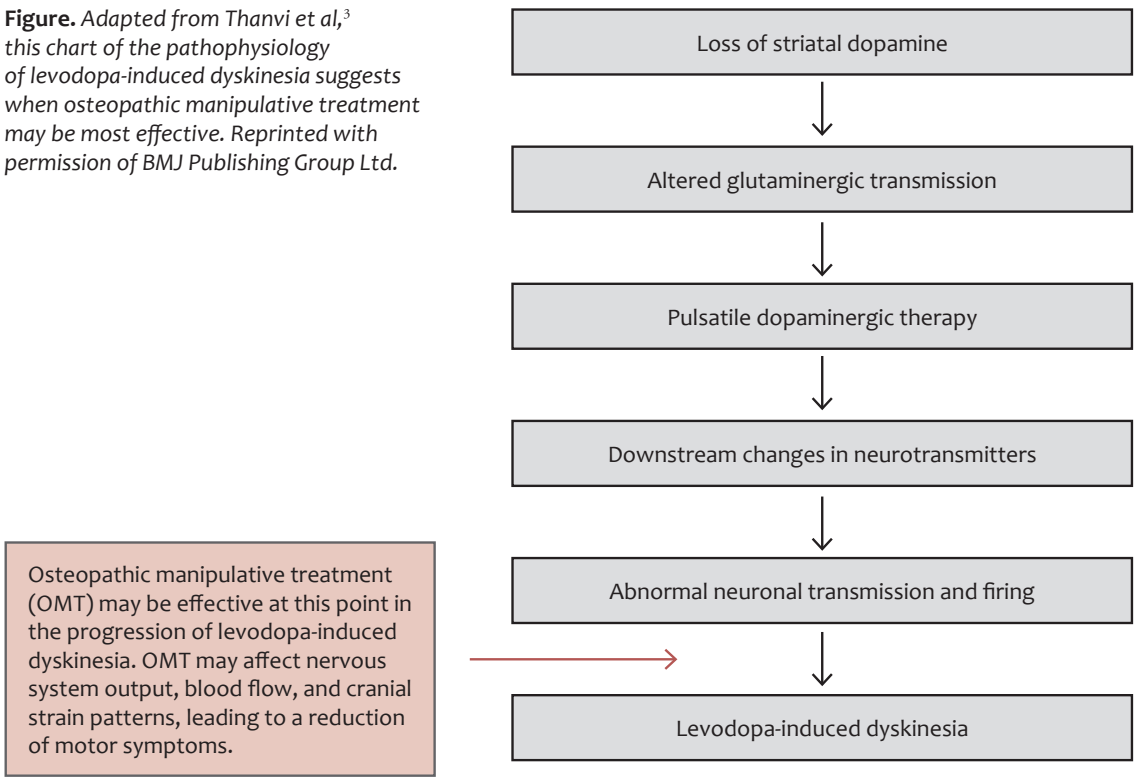

Figure. *Adapted from Thanvi et al,[3] this chart of the pathophysiology of levodopa-induced dyskinesia suggests when osteopathic manipulative treatment may be most effective. Reprinted with permission of BMJ Publishing Group Ltd.*

(continued from page 22)

to the decrease in dosage. Pertinent osteopathic findings included somatic dysfunctions in the OA and cervical regions and a right condylar compression, all of which were treated with myofascial release.

During the fourth and final weekly visit, the patient reported improved stability and continued resolution of orofacial LID. OMT was based on clinical osteopathic findings and the patient's subjective complaints. As with all previous visits, the primary focus of OMT was to address LID symptoms and the patient's gait and balance instability secondary to PD. Throughout the course of treatment, somatic dysfunctions in the cranial and OA regions often recurred by the next visit, but they improved overall.

The patient continued receiving OMT intermittently for 8 months, during which time he showed no signs of LID and he maintained the gains he had made in balance and stability. At a follow-up visit 16 months after the initial treatment, the patient's symptoms of LID had not returned and his dosage of carbido-levodopa had remained the same.

Discussion and Literature Review

An increasing number of articles are being published on the effects of OMT and neuromuscular therapy on PD motor symptoms. OMT has been shown to acutely improve gait in patients with PD because of its ability to affect motor deficits associated with PD.[5] A pilot study published in 2005 suggested that neuromuscular therapy may improve quality of life and motor function in patients with PD.[6] A 2011 study examined the effect of OMT on postural sway in healthy elderly subjects. In that study, anteroposterior sway was reduced to a statistically significant level after 4 OMT sessions, which may correlate with improved balance.[7] Although not curative, OMT certainly has a role in the well-rounded management of motor function in patients with PD.

While the authors found no published studies or case reports regarding using OMT to treat patients for LID, there are several reasons to believe OMT has a role in managing patients' LID and PD symptoms and the discomforts associated with them. A study investigating the occurrence of cranial strain patterns in patients with PD noted a higher frequency of OA and occipitomastoid (OM) compression cranial strain patterns in those patients.[8] An occipital dysfunction may cause strain at the sphenobasilar synchondrosis (SBS) because of how the occiput articulates at that location. The SBS is associated with vascular supply to much of the central nervous system. The middle cerebral artery runs along the lesser wing of the sphenoid to supply the primary motor cortex and premotor cortex, as well as to supply the striate arteries to the basal ganglia. Additionally, the substantia nigra of the basal ganglia is supplied by branches of the posterior cerebral and superior cerebellar arteries coming off the basilar artery.

The close relationship of the cranial arteries and the basal ganglia could be affected by somatic dysfunctions at the OA and OM articulations. Treating patients for these cranial somatic dysfunctions may enhance SBS movement and improve cerebrospinal fluid movement and blood flow. This in turn may help normalize nervous system activity to improve motor symptoms or slow their progression. As shown in the *Figure* on page 22, the effects of OMT are downstream in the progression of LID, and OMT should not be viewed as a curative treatment but rather as an adjuvant to standard care.

Taking into consideration OMT's effect on patients' balance, misaligned cranial bones may also directly affect intracranial nerves, such as cranial nerve VIII. Impaired vestibulocochlear nerve function may contribute to balance impairment.[7] Treating the sacrum, cranium and the structures in between may improve balance and postural control because of the dural attachment between the sacrum and cranium. The patient in this case had several cranial somatic dysfunctions, including sidebending and rotation strains, OA compression, and condylar compression. Treating the patient for these somatic dysfunctions—in addition to those found elsewhere in the body—may have contributed to improving his LID symptoms, sense of balance, and mobility.

This case further demonstrates the value of employing an osteopathic approach to treating patients with complex medical conditions. The onset of the patient's LID symptoms coincided with an increase in his levodopa dosage, but symptoms resolved during the course of 2 OMT sessions. OMT provided a nonpharmacologic approach that allowed better management of symptoms, continued levodopa treatment, and improvements in balance and motor function.

Because the dosage of the carbidopa-levodopa combination was decreased just after the patient's LID symptoms resolved, it is important to consider what role decreased dosage played in addition to continued OMT in the patient remaining asymptomatic for LID. In addition, it is important to note that no objective tools currently exist to measure LID symptoms. In this case, however, all findings were observed by the same physician for all visits, reducing the chances that the level of severity of the symptoms would be judged by different parameters at each visit.

(continued on page 24)

Levodopa-induced dykinesia *(continued from page 23)*

Conclusion

To the authors' knowledge, this is the first published clinical observation of using OMT to manage a patient for LID. Although further study is warranted, the potential for using OMT as an adjuvant treatment for patients with motor control symptoms associated with PD is encouraging, especially in light of an increasing number of studies on the topic. The authors do not claim that OMT will cure either PD or LID, but they maintain that used in addition to conventional pharmacological treatment, OMT is a safe, conservative approach for improving quality of life. The authors acknowledge that because this is a case study, there are concerns over the reliability and replicability of the effects of OMT in other cases. Further studies may do well to look at the effects of specific techniques on the various symptoms of PD and LID.

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Severe nausea and vomiting in pregnancy *(continued from page 18)*

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View From the Pyramids *(continued from page 5)*

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Peripheral Nerves: Lower Body

Dec. 4-6, 2015 • Midwestern University/Arizona College of Osteopathic Medicine

Course Description

Using principles developed by Jean-Pierre Barral, DO (France), participants in this course will examine the peripheral nerves of the lower body. Kenneth J. Lossing, DO, will demonstrate visceral manipulation techniques to identify and treat dysfunctions in the general anatomy, including those affecting vascular supply, innervation, axonal transport and mechanical aspects, as well as dysfunctions resulting from lesions and trauma.

Participants will learn palpation methods for finding a nerve and for determining dysfunction by identifying lack of pliability, hardness, and nerve "buds." In addition, participants will learn treatment approaches, effects of treatment, indications and contraindications.

Dr. Lossing will discuss diagnostic and treatment techniques for the lumbar plexus, the sacral plexus, the genitofemoral nerve, the lateral femoral cutaneous nerve, the obturator nerve, the femoral nerve, the saphenous nerve, the superior gluteal nerve, the sciatic nerve, the tibial nerve, the medial sural cutaneous nerve, the lateral dorsal cutaneous nerve, the medial and lateral plantar nerves, the fibular nerve and the intercostal nerves.

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Course Times

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Kenneth J. Lossing, DO, studied visceral manipulation with Jean-Pierre Barral, DO (France). An internationally recognized lecturer, Dr. Lossing contributed to the second and third editions of the American Osteopathic Association's *Foundations of Osteopathic Medicine* textbook.

As the Academy's 2014-15 president, Dr. Lossing starred in a two-minute segment of "American Health Front!" that focused on osteopathic manipulative medicine. The segment debuted on New York City's WCBS-TV on Sunday, May 18, 2014, and AAO members have been using it ever since to educate existing and prospective patients.

A 1994 graduate of what is now the A.T. Still University–Kirksville College of Osteopathic Medicine, Dr. Lossing served an internship and combined residency in neuromusculoskeletal medicine and family medicine through the Ohio University Heritage College of Osteopathic Medicine in Athens. He is board certified in both neuromusculoskeletal medicine and family medicine.

Dr. Lossing and his wife, Margret Klein, OA, run a private practice in San Rafael, California.

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