

THE AAO JOURNAL



A Publication of the American Academy of Osteopathy

TRADITION SHAPES THE FUTURE

•

VOLUME 11 NUMBER 3 FALL 2001



**Basic Sciences and Clinical Sciences:
Challenges to Understanding**

2001 CME Calendar

October 20

AAO's One-day course on OB/Gyn
San Diego, CA
Hours: 8 Category 1A

October 21-25

AOA Convention (AAO Program)
"Building and Sustaining a Healthy
Body Through Nutrition, Exercise, and
Posture"
San Diego, CA

November 9-11

Prolotherapy – Below the Diaphragm
UNECOM in Biddeford, ME
Hours: 20 Category 1A

30-Dec 2

Visceral Manipulation/Abdominal
Martin House
Indianapolis, IN
Hours: 24 Category 1A

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2002 CME Calendar

January 20-23

Introduction to OMT/Muscle Energy
Walter Ehrenfeucher, DO, FAAO
Program Chairperson
Florida (Location TBD)
Hours 23 Category 1A

February 3-10

Cruise CME /
Facilitated Positional Release
Eileen DiGiovanna, DO, FAAO
Program Chairperson
Mexican Riviera
Hours: 20 Category 1A

March 17-20

Visceral Manipulation/
Emotional/Trauma with Jean-Pierre
Barral, DO, MROF
Kenneth Lossing, DO
Program Chairperson
Norfolk, VA
Hours: 32 Category 1A

March 21-24

2002 Annual Convocation
Michael P. Rowane, DO,
Program Chairperson
Norfolk, VA
Hours: 24-33 possible Category 1A

April 20-21

Fulford's Percussion Technique(Basic)
Richard Koss, DO, Program Chairperson
Renton, WA
Hours: 14 Category 1A

May 3-5

Prolotherapy / Above the Diaphragm
Mark Cantieri, DO, FAAO
Program Chairperson
UNECOM in Biddeford, ME
Hours: 20 Category 1A

May 31-June 2

Greenman's Exercise Prescription
featuring Philip Greenman, DO, FAAO
Brad Sandler, DO
Program Chairperson
Indianapolis, IN
Hours: 20 Category 1A

July 26-28

Visceral /Structural Integrated
Kenneth Lossing, DO
Program Chairperson
Indianapolis, IN
Hours: 24 Category 1A

August 15-18

OMT Update at WDW®
Ann Habenicht, DO, FAAO
Program Chairperson
Lake Buena Vista, FL
Hours: 23 Category 1A

September 20-22

Myofascial Release
Judith O'Connell, DO, FAAO
Program Chairperson
Indianapolis, IN
Hours: 20 Category 1A

October 6

One-day Course on ENT Problems
Ann Habenicht, DO, FAAO
Program Chairperson
Las Vegas, NV
Hours: 8 Category 1A

October 7-11

AOA Convention (AAO Program)
George Pasquarello, DO
Program Chairperson
Las Vegas, NV

November 8-10

Prolotherapy: Below the Diaphragm
Mark Cantieri, DO, FAAO
Program Chairperson
UNECOM in Biddeford, ME
Hours: 20 Category 1A

December 6-8

Introduction to OMT/Counterstrain
John Glover, DO, Program Chairperson
Mesa, Arizona
Hours: 20 Category 1A

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The AAO Journal is the official quarterly publication of the American Academy of Osteopathy, 3500 DePauw Blvd., Suite 1080, Indianapolis, Indiana, 46268. Phone: 317-879-1881; FAX: (317) 879-0563; e-mail snoone@academyofosteopathy.org; AAO Website: <http://www.academyofosteopathy.org>

Third-class postage paid at Carmel, IN. Postmaster: Send address changes to American Academy of Osteopathy 3500 DePauw Blvd., Suite 1080, Indianapolis, IN., 46268

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The mission of the American Academy of Osteopathy is to teach, advocate, advance, explore, and research the science and art of osteopathic medicine, emphasizing osteopathic principles, philosophy, palpatory diagnosis and osteopathic manipulative treatment in total health care.

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The American Academy of Osteopathy (AAO) Journal is a peer-reviewed publication for disseminating information on the science and art of osteopathic manipulative medicine. It is directed toward osteopathic physicians, students, interns and residents and particularly toward those physicians with a special interest in osteopathic manipulative treatment.

The AAO Journal welcomes contributions in the following categories:

Original Contributions

Clinical or applied research, or basic science research related to clinical practice.

Case Reports

Unusual clinical presentations, newly recognized situations or rarely reported features.

Clinical Practice

Articles about practical applications for general practitioners or specialists.

Special Communications

Items related to the art of practice, such as poems, essays and stories.

Letters to the Editor

Comments on articles published in *The AAO Journal* or new information on clinical topics. Letters must be signed by the author(s). No letters will be published anonymously, or under pseudonyms or pen names.

Professional News of promotions, awards, appointments and other similar professional activities.

Book Reviews

Reviews of publications related to osteopathic manipulative medicine and to manipulative medicine in general.

Note

Contributions are accepted from members of the AOA, faculty members in osteopathic medical colleges, osteopathic residents and interns and students of osteopathic colleges. Contributions by others are accepted on an individual basis.

Submission

Submit all papers to Anthony G. Chila, DO, FAAO, Editor-in-Chief, Ohio University, College of Osteopathic Medicine (OUCOM), Grosvenor Hall, Athens, OH 45701.

Editorial Review

Papers submitted to *The AAO Journal* may be submitted for review by the Editorial Board. Notification of acceptance or rejection usually is given within three months after receipt of the paper; publication follows as soon as possible thereafter, depending upon the backlog of papers. Some papers may be rejected because of duplication of subject matter or the need to establish priorities on the use of limited space.

Requirements for manuscript submission:

Manuscript

1. Type all text, references and tabular material using upper and lower case, double-spaced with one-inch margins. Number all pages consecutively.

2. Submit original plus three copies. Retain one copy for your files.

3. Check that all references, tables and figures are cited in the text and in numerical order.

4. Include a cover letter that gives the author's full name and address, telephone number, institution from which work initiated and academic title or position.

5. Manuscripts must be published with the correct name(s) of the author(s). No manuscripts will be published anonymously, or under pseudonyms or pen names.

6. For human or animal experimental investigations, include proof that the project was approved by an appropriate institutional review board, or when no such board is in place, that the manner in which informed consent was obtained from human subjects.

7. Describe the basic study design; define all statistical methods used; list measurement instruments, methods, and tools used for independent and dependent variables.

8. In the "Materials and Methods" section, identify all interventions that are used which do not comply with approved or standard usage.

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We encourage and welcome computer disks containing the material submitted in hard copy form. Though we prefer Macintosh 3-

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Provide a 150-word abstract that summarizes the main points of the paper and its conclusions.

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References

1. References are required for all material derived from the work of others. Cite all references in numerical order in the text. If there are references used as general source material, but from which no specific information was taken, list them in alphabetical order following the numbered journals.

2. For journals, include the names of all authors, complete title of the article, name of the journal, volume number, date and inclusive page numbers. For books, include the name(s) of the editor(s), name and location of publisher and year of publication. Give page numbers for exact quotations.

Editorial Processing

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From the Editor

by Anthony G. Chila, DO, FAAO



Physiology

Fundamental physiologic understanding to address the many control systems of the body. In this issue, it seems that our contributors are all focusing on that point.

Osteopathic Manipulative Treatment of Low Back Pain during Labor by Scott Carpenter, OMS-III and Adrian Woolley, DO, p. 21) discusses the implications for OMT and its effectiveness in treating back pain concurrent with parturition. In the case presented, full attention is given to observation and documentation of physiologic changes associated with OMT during labor. This was presented at the A. Hollis Wolf Case Presentation, AAO Convocation 2001. Osteopathic Treatment of Nephrotic Syndrome by Sonia Rivera-Martinez, OMS-IV and John D. Capobianco, DO, p. 24) discusses the role of OMT in treatment of a 19-years old hospitalized patient with nephrotic syndrome. Additionally, the clinical presentation of nephrotic syndrome, medical management and clinical course before and after OMT are described. Osteopathic Treatment by Injection; A Comparison of Osteopathic Manipulative Treatment and Neural Therapy by Robert F. Kidd, MD, p. 29) discusses the philosophies of osteopathy and neural therapy. The drawing of historical comparisons

addresses the ongoing “search for health” which has been the hallmark of medicine’s major reformers. Osteopathic Regulation of Physiology by Douglas G. Richards, PhD; David L. McMillin, MA; Eric A. Mein, MD; Carl D. Nelson, DC, p. 34) discusses the physiologic effects of “holding the vasomotor center”, a historical technique of inhibitory pressure in the cervical area. Of note to readers should be the observations and comments about “sham treatment” provided by the authors.

Two osteopathic colleges are represented in this issue: Des Moines University Osteopathic Medical Center (Carpenter, Woolley) and NYCOM-NYIT (Rivera-Martinez, Capobianco). Private practice and teaching are represented (Kidd). The Meridian Institute (Richards, et al.) is an independent, non-profit organization conducting research in manual medicine and other areas of complementary medicine.

Regular columns have much to offer. Letter to the Editor addresses the physiology of the Primary Respiratory Mechanism (PRM) and the Cranial Rhythmic Impulse (CRI). R. Paul Lee, DO, FAAO offers response to Charles H. Cummings, DO, FAAFP. Kevin C. Zorski, DO, et al. respond to James M. Norton, PhD.

The Zorski letter is reprinted with permission from the *JAOA* (Vol 101, No 6, June 2001, 329). Message from the President reminds us again of problems associated with continuity of training in OMM for our predoctoral students, interns, and residents. Message from the Executive Director clearly documents the fact that the American Academy of Osteopathy is a multi-disciplinary affiliate of the American Osteopathic Association. Dig On offers an overview of the recently concluded 13th Triennial Congress of the International Federation of Manual Medicine (FIMM). For the first time in its history, this Congress was held in the United States. From the Archives presents “Pathology of Glandular Tissues Affected by Vertebral Lesions” and “Resume of Human Findings” (Bulletin No. 7, The A.T. Still Research Institute, 1931). These reports were from experiments carried on in the Sunny Slope Laboratory of The A.T. Still Research institute. The human studies were made in the Clinical Laboratories in Los Angeles and in South Pasadena. Louisa Burns, MS, DO was Acting Director at that time. Other members of the staff were Helen Gibbon, DO, Laura Parsons Tweed, DO, and W.J. Volibrecht, DO. □

Message from the President

by John C. Glover, DO



One of the goals of the AOA Unity Campaign is to unite our profession and showcase the osteopathic profession to the public. Our profession has had a public relations problem from its inception. What is it that we are trying to communicate to the public? Is osteopathic medicine a unique branch of medicine in the United States? How do we instill this uniqueness to the students in training to become osteopathic physicians? Do we have a means to measure if a student has become an osteopathic physician?

Osteopathic medicine is not well defined and in fact, is defined differently depending on which part of the world the question is asked. One area of common ground is philosophy, but it is difficult to measure philosophy in practice. Scientific knowledge, on the other hand, is easily measured. The use of osteopathic manipulative treatment in the management of patients can be measured, but its effect on the health of patients is more difficult to measure.

Osteopathic physicians are not unique in the use of their hands for diagnosis and treatment. Other professions and cultures use their hands to effect patient health. What then is unique? It is the combination of our training as physicians and the use of our hands for diagnosis and treatment in a philosophical context that makes us unique. When we evaluate a patient, the differential diagnosis includes those etiologies that would be

listed by a medical doctor, but should always include the contribution of the musculoskeletal system. The contribution may be primary or secondary and vary in importance, but it is an integral part of our thinking.

Over the years, osteopathic education has evolved to the point that students are given a sound foundation during the first two years of osteopathic medical. This has not always been the case. While the quality and quantity of osteopathic education has always varied between schools, it is the opportunity to learn how to manage patients osteopathically that has changed most dramatically. The profession worked to achieve parity with allopathic physicians. The need to emphasize our similarities changed the way osteopathic physicians applied their perspective in the management of patients. At one time, every student was expected to be able to diagnose problems in the musculoskeletal system, evaluate potential effects on the patient and provide appropriate osteopathic treatment. That might involve rib raising for a patient with pneumonia or a lumbar roll for a patient with an articular restriction producing low back pain in addition to more traditional medical management. Every diagnosis had some musculoskeletal finding and, if it was significant, it was treated.

Times have changed to the point where a student may go through two years of rotations during the third and fourth years of osteopathic medical school and never be asked to make a structural diagnosis or give an osteopathic manipulative treatment. That is not to say that there are not highly skilled osteopathic physicians using their hands to broaden their diagnostic and therapeutic management of patients. Those osteopathic physicians may be found doing family practice,

obstetrics and gynecology, pediatrics, internal medicine, surgery, specializing in osteopathic manipulative medicine, or any other area of medical practice. The problem is that there are not enough of them to set the practice standards of their specialty or provide training opportunities for our students.

The only way to ensure that students get the practice experience needed to build confidence and hone their manipulative skills is to require a base minimum number of osteopathic manipulative treatments before graduating from an osteopathic medical school. This number might be 100, which is approximately one treatment per week or 500, which is about one per day. The number is not as important as the need to have a minimum standard required to graduate. Implied in this is the supervision needed to continue a student's learning and fine tune their skills. It would also seem obvious that there would be a diversity of patient problems required. The diversity should be based on the application to different services and a variety of presenting complaints. A complaint may be as obvious as a cervical strain secondary to a motor vehicle accident to the complex interaction between the heart and its associated somatic tissues in a post myocardial infarction patient.

In order to demonstrate didactic knowledge and psychomotor skill, each student would be required to pass a proficiency exam to graduate. This could be done through a practical exam format, similar to those utilized during the first two years of training. Clinical scenarios and standardized patients could be used to provide consistency and reliability from one test site to another. The National Board of Osteopathic Medical Examiners is working toward implementation of a similar

continued on page 28

Message from the Executive Director

by Stephen J. Noone, CAE



AAO = A truly multi-disciplinary practice affiliate

During the 2001 AOA House of Delegates meeting, I discussed with representatives of other American Osteopathic Association practice affiliates, the challenges in planning continuing medical education programs that might appeal to a broader audience. I was struck by the predominant misperception that the members of the American Academy of Osteopathy consisted of only “manipulative medicine” specialists. While I communicated that the Academy was truly a “multi-disciplinary practice affiliate” within the osteopathic medical profession, I had no data to verify my statement.

Director of the AOA Department of Membership, Norbert Budde, and Manager of Physician and Research Services, Steve Andes, were most helpful in assisting my quest for data. AAO Associate Executive Director, Diana Finley, sent to the AOA an electronic data file that contained 1,592 DO Academy members. Mr. Budde was grateful for the opportunity to crosscheck our respective records and correct errors. I was thrilled to have access to AAO members’ self-identified osteopathic medical specialties. Despite the fact that some may question the accuracy of the data, this information is the best that the profession has to offer in terms of practice specialty of AOA members.

The data retrieved from the AOA’s files validates my verbal communications about the Academy’s general membership and should not be surprising to readers when they consider the Academy’s stated purpose. The AAO Mission has guided strategic planning since the early 1990s, result-

Self-identified Specialty	# AAO members	% age
Family Practice (includes two GP)	882	55.40
Family Practice + other specialty (e.g. OMT)	32	2.01
OMT/OMM	310	19.47
Internal Medicine	47	2.95
Rehabilitation Medicine and PM&R	46	2.89
Pediatrics	28	1.76
Surgery (including orthopedics, urology)	27	1.70
Emergency Medicine	25	1.57
OB/GYN	15	0.94
Retired	63	3.96
33 other specialties	120	7.54
Total	1,592	100.19

ing in goals, objectives and action plans reviewed annually by the AAO leadership and amended/revised as needed.

The Mission of the American Academy of Osteopathy is to teach, advocate, advance, explore, and research the science and art of osteopathic medicine, emphasizing osteopathic principles, philosophy, palpatory diagnosis and osteopathic manipulative treatment in total health care.

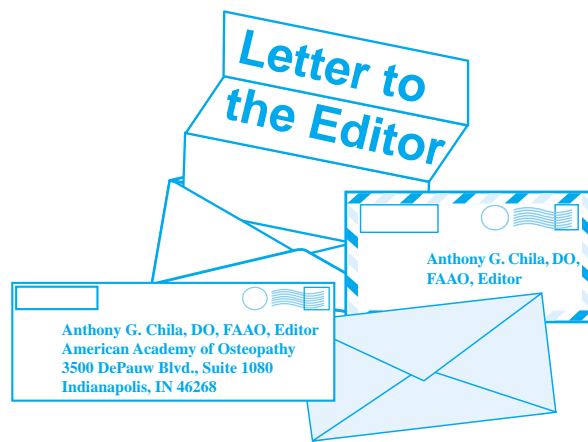
For nearly ten years in my position as the Academy executive director, I have observed the AAO leadership reaching out to the broader osteopathic medical profession in a conscious effort to improve overall education in osteopathic principles and practice and osteopathic manipulative treatment. I have watched passionate advocates take a leading role in advancing the profession’s research agenda to document both clinical efficacy and health care outcomes in osteopathic medicine. It is apparent that one of the greatest strengths of this organization is in its diversity, confirmed again by this table on self-identified specialty. The AAO is truly a multi-disciplinary practice affiliate of the American Osteopathic Association.

Can you palpate the cranial rhythmic impulse (CRI)?

Researchers are seeking osteopathic physicians skilled in palpating the CRI, to participate in an ongoing study intended to correlate the CRI with the Traube-Hering-Mayer oscillation in blood flow velocity as measured by laser-Doppler flowmetry. (See *JAOA* 2001;101:163-173)

The investigators are Kenneth E. Nelson, DO, FAAO and Principal Investigator for the project, Thomas Glonek, PhD, and Raymond J. Hruby, DO, FAAO. The study will be performed in the osteopathic diagnosis and treatment service (OD&TS) area of the American Academy of Osteopathy’s program at the AOA Convention and Scientific Seminar in San Diego (check final program for exact location.)

Pending local IRB approval, data will be gathered from 9:00 – 11:00 am and 2:00 – 5:00 pm on Monday, Tuesday, and Wednesday, during open OD&TS hours. Please come and participate in this study to advance our understanding of the physiology of the CRI. □



Dear Editor,

In reference to the letter to the editor from Charles Cummings, DO, FAAFP in the Summer 2001 issue of *The AAO Journal*, I would like to respond. I appreciate Dr. Cummings' willingness to think outside the box. My paper, "The Primary Respiratory Mechanism Beyond the Craniospinal Axis", *The AAO Journal*, Vol 11, No. 1, 2001 about which Dr. Cummings writes his letter is an effort to do just that, to think outside the box. Because the paper is broad based in its approach, it is difficult, perhaps, for the reader to apprehend all the details at first reading. However, some of the issues addressed by Dr. Cummings in his letter to the editor appear in the paper and agree with his expressed opinions. For instance, I mention early in the paper that one cannot assume that what one feels as the "Tide" in the organism generates from the brain and CSF. The source of the "Tide" needs further critical delineation.

The paper is an attempt to make more scientific the phenomena of the PRM, and therefore the theme of the paper addresses in various details and examples the comment of Dr. Cummings when he decries the fact that many attribute the phenomena of the PRM to "mysterious or almost supernatural" effects.

On the other hand, the paper also acknowledges that the "Life Force" behind the palpable phenomena may be beyond investigation by scientific

methods. Sutherland implied that it is not so important to know how the "Tide" originates, but rather to know how to apply it clinically for success as an osteopathic physician. We can leave to the creator that which is beyond our realm of human investigation. Many natural phenomena from quantum physics, for example, may be mysterious and to the point of seeming supernatural, yet these phenomena describe reality according to the best mathematicians and investigators in physics. I do not think it is "anti-scientific," as Dr. Cummings claims to admit that the origin of these phenomena cannot be fully explained by science.

I also disagree with the notion that cranial osteopathy will not be integrated into the standard practice of medicine unless we can prove scientifically all aspects of the PRM. I believe the practice of medicine will accept cranial osteopathy on the basis of its clinical effectiveness to be demonstrated by clinical outcomes studies.

Regarding Dr. Cummings' criticism that the paper does not go far enough in describing the tensegrity model, I concur. I could not cover the topic fully in the context of the myriad of concepts, all of which were briefly covered. It deserves a full description in a paper dedicated to tensegrity, alone. For further information on the topic, I recommend: Ingber, DE, *The Architecture of Life*, *Scientific American*, January 1998, and for a fuller

treatment of the subject by this author, please refer to "Tensegrity" *The Cranial Letter*, August 2000, Volume 53, Number 3, Page 10-13.

I agree with Dr. Cummings that "tensegrity is an example of a SYSTEM." A careful reading of the paper reveals many examples or still shots, which creates in the mind of the reader a fuller image of a dynamic system. I also agree "the tensegrity model will be one of the most valuable concepts in osteopathic medicine and how we understand the musculoskeletal system." I believe it may overturn some of our basic theories. For example, an important conclusion to be drawn from the tensegrity model is that postural analysis and lift therapy need to be carefully done in light of tensegrity, that a short leg may derive as often from forces coming from above, such as fascial tension, as from forces coming from below, such as gravity.

With regard to Dr. Cummings' willingness to differ with Dr. Still when he said, "The osteopath must remember that his first lesson is anatomy, his last lesson is anatomy, and all his lessons are anatomy," I must differ with Dr. Cummings. If one sees the behavior of various enzymes and substrates as structural, if one understands that the matrix and the cytoskeleton together mechanically control the activity of enzymes, if fluxes of Calcium ions triggering enzymatic events are visualized as electromechanical waves, everything becomes structure, form, or

anatomy playing itself out in a unified system of function. The “anatomy” of biochemical activity describes tensegrity in action.

I also agree with Dr. Cummings that the paper is not a full disclosure of the mechanisms of the PRM, but only a peek into the possibilities that we may learn as we keep exploring. It is a teaser, in fact, to interest others to “Dig On.”

A final comment: Please use the term “CRI” (Cranial Rhythmic Impulse) as a special case of the PRM (a generalized phenomenon including the head region and the rest of the body). The CRI is to be used to describe a numerical counting of an oscillation in the head and nothing more. The primary respiratory mechanism (PRM) describes a respiratory motion, on the level of the cell, throughout the body, first defined as the five phenomena by Sutherland: cranial bone mobility, inherent CNS motility, CSF fluctuation, tensegrity of the Dural membranes, and mobility of the sacrum in a respiratory motion.

Further research is indeed needed to understand the fullness of the phenomena of living systems, especially the PRM.

Respectfully,
R. Paul Lee, DO, FAAO
Durango, CO



DOs question intent of challenge

To the Editor:

We would like to respond to the letter by James M. Norton, PhD, “Questioning of OCF should rouse osteopathic response” (*JAOA* 2000:100:763), concerning osteopathy in the cranial field (OCF).

First, Professor Norton refers to studies published in physical therapy

journals in which the reliability of assessing a patient’s cranial rhythmic impulse (CRI) was called into doubt. Physicians familiar with OCF know that the CRI is highly variable, that it can change many times during the course of treatment, and that there are multiple rates palpable within any given patient. These rates can change according to the level of the physician’s autonomic nervous system, and, in fact, some physicians who practice OCF pay little attention to these rates. The CRI is not to be confused with the primary respiratory mechanism the CRI - is merely one manifestation of the primary respiratory mechanism.

Second, Professor Norton writes that “the burden of proof of efficacy lies squarely with practitioners of OCF.” While we would certainly appreciate outcome studies verifying the efficacy of this work, most physicians (regardless of their specialty) are clinicians, not research specialists, and have neither the time nor the expertise to perform such studies. We do know that the American Academy of Osteopathy is addressing the need for further studies and more researchers.¹ In the meantime, we do not feel burdened and accept our satisfied patients as proof enough of the efficacy of OCF.

Third, Professor Norton states that “the osteopathic profession must speedily respond before scientifically unsubstantiated claims regarding OCF threaten acceptance of this modality and weaken the public image and scientific credibility of the osteopathic profession.” We agree that clinical research would be helpful for the scientific community to more readily accept our work, but we do not see the need for more research as weakening our public image. There are a great number of satisfied patients, many with severe complaints that no other mode of therapy could help. It is noteworthy that many physicians, including internists,

neurologists, neurosurgeons, rheumatologists, and pediatricians, refer patients for OCF. Apparently, they fully see and appreciate its value.

Cranial osteopathy as a mode of therapy is not alone in the need for further research. Richard Smith, editor of the *British Medical Journal*, wrote that “only about 15% of medical interventions are supported by solid scientific evidence. . . This is partly because only 1% of the articles in medical journals are scientifically sound and partly because many treatments have never been assessed at all.”² A Congressional Office of Technology Assessment study also found that only an estimated 10% to 20% of the techniques physicians use are empirically proven.³ In addition, in late 1999, the Institute of Medicine of the National Academy of Sciences released its study of medical mistakes. The study estimated that the number of patients in the United States who die each year from medical errors ranges from 44,000 to 98,000.⁴ Given the statistics, OCF, a conservative and noninvasive therapeutic modality, has great appeal to the public.

Last, we are concerned about the tone of Professor Norton’s challenge: “My findings were presented as a challenge, to which I have received no response from the osteopathic community.” It is clear from this statement that Professor Norton does not feel himself to be a part of the osteopathic community, though he teaches at a college of osteopathic medicine. He presented virtually the same letter to the American Academy of Osteopathy Journal, to which he received a lengthy reply,¹ yet he continues to state “...I have received no response.”

We feel that these challenges may have gone beyond the friendly pursuit of science and are, perhaps, meant to be disruptive. We are not sure of Professor Norton’s motivation for these challenges, but we are con-

cerned that he may be creating an unfriendly, negative environment for students interested in studying traditional, hands on osteopathic medicine. We invite Professor Norton to join the osteopathic community rather than challenging it. We recognize that he is a gifted teacher, and we would welcome his contributions to osteopathic medicine. We would also welcome research physicians interested in designing studies to prove osteopathic medicine's efficacy.

We remain grateful to W. G. Sutherland, DO, for unveiling the primary respiratory mechanism, which continues to benefit us and our patients as it inspires us on a daily basis.

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Jeffrey R. Greenfield, DO
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Andrew H. Haltorf, DO
Norway, ME

References

1. Nelson KE. A wake-up call for osteopathic physicians. *American Academy of Osteopathy Journal* 2000;10:17.
2. Smith R. Where is the wisdom . . .! *BMJ* 1991;303:798-799.
3. Office of Technology Assessment. *Assessing the efficacy and safety of medical technologies*. Washington, DC: Congressional Office of Technology Assessment. 1987:7.
4. Dosseu :L. *The Science Blues*. Alternative Therapies 2000;6:96.

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Berkeley Brandt, Jr., DO

AAO Past President Succumbs

We are saddened to learn that **Berkeley Brandt, Jr., DO**, 86, of Vouvry, Switzerland, passed away in his sleep on February 13, 2001. His widow, Rosemary, advised us "he died of a general cancer, but was able to stay at home practically to the end. He was very brave, never complained and kept his humor until he died." Dr. Brandt also is survived by four children, all living in the United States.

Dr. Brandt's first career was as an aeronautical engineer and airline captain for 14 years with both United and Pan American airlines. He had been an active member of the Academy since he graduated from the Philadelphia College of Osteopathy in 1966. He completed his rotating internship at Pinnacle Health Community General Osteopathic Hospital in 1967 before setting up a general practice in Boise, Idaho. He joined the Federal Aviation Administration as Assistant

Regional Flight Surgeon for the Northwest Region in 1971. He served as a member of the AAO Boards of Governors and Trustees, including a term as AAO President in 1974-1975. Dr. Brandt was an AAO Life Member and relocated to Switzerland in 1986.

He was a strong advocate for the Academy's growth, recommending in his November 1975 president's report that the AAO "increase dues, increase membership and hire a permanent director." **James R. Stookey, DO**, FAAO confirmed that leadership goal by sharing memories of the AAO Trustees' meeting at Dr. Brandt's household in Squim, WA. They met to interview **Louise Astell, DO**, who later was to become the AAO's first executive director. Dr. Stookey said: "Her employment was to a large degree due to the vision of then President Brandt...This vision for our organization has since proven its worth."

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Dig On!

by Anthony G. Chila, DO, FAAO

The 13th International Congress of the International Federation of Manual/Musculoskeletal Medicine (FIMM) was held at Chicago, IL, July 23-27, 2001. The conference was jointly sponsored by the Kirksville College of Osteopathic Medicine and the University of Wisconsin Medical School, Continuing Medical Education. The American Academy of Osteopathy (AAO) and the American Association of Orthopaedic Medicine (AAOM) were cooperating organizations. The Congress Chairman was Michael L. Kuchera, DO, FAAO.

FIMM is an organization of physicians interested in the application of Manual Medicine in the overall practice of medicine. From its organization in 1965 until 1977, membership consisted only of medical physicians (MD). In 1977, the first American-trained osteopathic physicians (DO) became members. Triennial Congresses have been held since 1965. The majority of the Congresses have been held in Europe; in 1998, Australia was the first non-European host, and in 2001, Chicago was the first American host. More than two hundred attendees represented 21 countries.

Dr. Kuchera utilized the theme *Integrative Manual Medicine* to focus on practical clinical applications of a manual approach in various specialty fields. Advances in the evidence-base for manual medicine were also emphasized. A wide distribution of presenters, DO and MD, from America and abroad, addressed aspects of the theme. Abstracts, Free Papers, and daily Workshops rounded out the program.

Having had the opportunity to attend and present at previous FIMM Congresses (Madrid, 1986; London, 1989, and Brussels, 1992), I was most interested in the continuing effort of this organization to focus the role of Manual/Musculoskeletal Medicine in clinical practice. Now, as then, philosophical views provided points of accommodation as well as resistance.

Michael Hutson, MD, President of FIMM presented the *State of the World* address. Doctor Hutson discussed "The Impact Of Globalisation On The Development Of Neuromusculoskeletal Medicine: From Sisyphus To Prometheus And Beyond". He is a graduate of St. Thomas's Medical School in London, and a consultant

orthopaedic and sports medicine physician at Leeds General infirmary in Nottingham, England. The editor and principal author of the text, *Sports Injuries: Recognition & Management*, Doctor Hutson has also written two other texts and numerous articles on orthopaedic and sports topics. I found his presentation to be most scholarly and thoughtful, refreshingly more so than I have heard in many years. Citations from his address (as presented in the Congress Workbook) are given, which address FIMM, Specialization and Competence, Non-Medical Associations and Groups:

"FIMM assists nations, individually and collectively, to achieve and maintain best or (perhaps more appropriately stated as) *better medical practice* by its promotion of high standards of education and accreditation. In this regard, I dislike the concept of "standardisation". Given the different "schools" and the essential characteristics of neuromusculoskeletal medicine, standardisation is impossible and in any case frankly undesirable. The diversity and distinctiveness of those branches of medicine that are characterized by the diagnosis and management of neuromusculoskeletal disorders – for example, orthopaedic medicine, musculoskeletal medicine, manual medicine and osteopathic neuromusculoskeletal medicine, all of which are predicated upon the concept of somatic dysfunction – is testimony to the eclecticism and uniqueness of the discipline. As a consequence, FIMM is a 'broad church'. It is worth stating, however, that no organisation, FIMM included, can work in a wholly eclectic fashion. Without strict academic traditions the Scientific Committee of FIMM would have no focus or direction. I am happy to report that FIMM is alive and well, due in no small measure to the dedication and drive of the chairmen of the Education and Scientific committees, supported by the unstinting labours of the committee members, FIMM has undertaken and completed work that is monumentally important, some of which will be apparent to you during this Congress. It gives me great pleasure to report that globalisation, driven to a considerable degree by the rise of Information Technology, has led to the increased role of the North American continent and the Antipodes in the international affairs of FIMM. Outwith FIMM, interna-

tional teaching in neuromusculoskeletal medicine continues apace. I am particularly excited by the prospect of the proposed masters degree in applied osteopathic neuromusculoskeletal practice at KCOM.”

“Globalisation has fuelled the ambition for greater resonance, for instance the development of a monospecialty of musculoskeletal medicine in those countries where it is of relevance. Other than osteopathic neuromusculoskeletal practice in the USA the only country in the world in which manual medicine is a recognised (state accredited) specialty is Russia. By contrast, the achievement of “*competence*” in manual medicine, a somewhat different concept, essentially a basic level of expertise across many medical disciplines, is the target in some European countries. For all, the drive for improved standards is always a priority.”

“The relationship between neuromusculoskeletal medicine and allied (particularly nonmedical) associations and groups is a contentious issue that concerns me greatly as President of FIMM, but it applies equally outwith FIMM. In many countries musculoskeletal physiotherapists have developed autonomy and independence – either by default, a consequence of the apathy and/or incompetence of those branches of the medical establishment that traditionally have been expected to provide a “service” to patients with locomotor disorders, or by design, but often meritorious and associated with exemplary research in the last decade. “*Low back pain, please treat*”, the referral letter of the inadequate or of the desperate physician, has enabled the development and status of many competing clinical providers. Globalisation has certainly seen a significant advance in osteopathy and chiropractic worldwide. Their power base throughout the world is increasing steadily. It is my view that attempts to discredit such professions or to suppress or reverse their autonomy are doomed to failure. *We need to harness our energies to improve our own standards and market our expertise, not waste them by persistent censure of others.* Internecine problems can threaten our focus and determination. Cultural differences are the food of life but can sometimes be poisonous. Within FIMM we respect the diverse national views on the role expected of the medical profession in general within healthcare provision, and on the status of neuromusculoskeletal medicine in particular. We understand the sometimes-conflicting opinions on the coveted domination by the medical profession of the provision of services to patients with musculoskeletal disorders. Tensions generated within an organisation may not necessarily be reduced or abolished by improved standards of practice.”□

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Pathology of glandular tissues affected by vertebral lesions

from Bulletin No. 7, A. T. Still Research Institute, 1931. pp. 14-23

This report is based chiefly upon studies made of the tissues of rabbits, guinea pigs, rats, and cats. The changes due to vertebral lesions are identical in all these animals. Human material is rarely secured which is suitable for adequate study, though such material as we have been able to secure indicates that the changes in human tissues are almost if not quite identical with those found in animal tissues. Some study has been made of the tissues of goats, calves, dogs, wild rabbits, gophers, and a few other mammals, and these indicate that the effects of lesions are practically the same in all mammals.

The effects of a lesion are first visible in the changes in the circulation through the viscus. Later changes are recognizable in variations in the amount and the quality of the secretions of the glands, in the tone and the activity of the muscular walls of the hollow viscera and, sometimes, of the ducts, and in the histological picture presented by tissue sections of the glands. It is not always possible to determine whether the later series of events is due to the circulatory changes alone or not. Certainly the circulatory changes are in part responsible for the final results of the bony lesions because the changes in the distribution of the blood present a conspicuous feature in the final condition of the tissues.

The manner in which vertebral lesions affect viscera has been the subject of much study for many years. Even yet, only certain aspects of this important question have been explained.

Dr. Carl P. McConnell reported some of this work in his President's Address at the meeting of the American Osteopathic Association in Denver, in August, 1905. A report of experiments performed in the Laboratory of Physiology. The Pacific College of Osteopathy, was published in the *North-ern Osteopath* for August 1905. After this time, the effects of lesions on viscera were studied by others in private laboratories and in the laboratories of the Pacific College of Osteopathy and of the American School of Osteopathy. The A-T Still Research Institute was incorporated in 1906, and grants from the income of the Endowment Fund of the Institute

helped to pay the expenses of this work for several years. Later work was done by the Institute staff working in the Institute laboratories, and this work has been reported in the *Bulletins* of the A. T. Still Research Institute.

The effects produced by vertebral lesions on viscera depend upon the structural relations of the bones affected, the nerve centers of the spinal cord, and the nerve relations between these centers, the blood vessels, and the viscera.

Nearly all viscera are innervated from two or more centers or groups of centers within the central nervous system. These centers exert a somewhat antagonistic influence over the circulation and the secretion of the glands. In many cases subordinate centers are subject to the control of a single center in the medulla, pons, or midbrain. Nerve impulses, arising in these controlling centers are carried to other nerve centers in the spinal cord or the medulla. The visceromotor centers of the spinal cord are mostly located in the lateral horns of the gray matter, or in a lateral cell mass which lies near the center of the crescent formed by the gray matter of each side of the spinal cord. Homologous centers in the medulla, pons, and mid-brain are not so easily located because these centers have been subjected to greater changes in structure, location, and function during ontogenetic and phylogenetic development.

The nerve fibers which are derived from the cells in the spinal centers of the thoracic cord pass from the central nervous system into the sympathetic ganglia. As they leave the gray matter each nerve fiber attains a fat-like sheath which protects it to some extent from the pressure, injury, and certain abnormal chemical conditions in the lymph. This sheath is lost as the nerve fiber enters the sympathetic ganglion. The nerve fiber breaks up into many fine fibrillae and these become entangled with dendrites of the sympathetic nerve cell in such a manner as to form a sort of basket-like structure which surrounds the sympathetic nerve cell. No definite continuity of protoplasm has been described between the sympathetic dendrites and the fibrillae derived from the entering axon. The axon of the sympathetic cell pass to the gland cells and to the walls

of the blood vessels in all secreting-viscera. Synapses within the sympathetic nervous system are rare if, indeed, it ever occurs that more than one sympathetic nerve cell intervenes between the spinal centers and the viscera innervated therefrom.

The white rami communicantes originating in any given spinal segment may be subjected to the abnormal pressure and the abnormal chemical structure of edematous tissues in the vicinity of a vertebral lesion. These nerve fibers are somewhat protected by the medullary sheaths. The amount of medullary substance is, however, very scanty for these nerve fibers and the sub-alkaline tissue juices plus the pressure of the edematous fluids tend to diminish the efficiency of the affected nerve fibers as transmitting agencies. The nerve cells of the sympathetic ganglia and the gray nerve fibers emerging from these ganglia have very slight or no protection from these abnormal conditions.

The edematous area around a vertebral lesion in the thoracic region extends beyond the angles of the ribs and usually affects the tissues for one or two segments beyond the lesioned area. The sympathetic ganglia in the cervical and lumbar regions, and those which lie in the body cavities in close connection with the viscera innervated, are less seriously affected by vertebral lesions than are those located within the bony cage of the thorax.

The relations of viscera and nervous system are so complicated that it is not possible to anticipate what the effect of any given lesion will be except by experimental and clinical evidence. Minimal, subminimal, and maximal stimulations produce reactions which differ in kind as well as in degree. The liminal values of nerve centers and, probably, of nerve endings vary during fatigue, and as a result of changes in blood pressure and in the carbon dioxide content of the blood. These varying physiological conditions may affect one viscus more profoundly than another viscus, or may affect one group of nerve centers more profoundly than another group of nerve centers. Many of these factors are hidden from any method of study now at hand. The ultimate algebraic sum of all these factors can be determined only by the study of human or animal subjects before and after definite vertebral lesions have been produced and of the same subjects after the lesions have been corrected.

Tests made for human subjects are always complicated. The study of human beings who are ill and who have certain bony lesions involves the complexities, not only of the normal structures and the normal functions, but also those due to the simultaneous or consecutive efficiency of several etiological factors. For this reason, human studies made of individuals who have lesions but who do not display serious symptoms are of considerable importance

in the study of the effects of vertebral lesions. Some of the results of this method are given in the sections one "The Effects of Lesions on Human Urines" in this *Bulletin*.

Histological studies of viscera affected by lesions are given in connection with the viscera whose functional changes are described in this *Bulletin*. Generally, the effects of any vertebral lesion are most marked in the viscera innervated from the spinal cord segment associated with the lesioned vertebra.

The first effect, produced immediately after an acute lesion has been caused by any method, consists in a sharp constriction of the arterioles. This is followed by a slower dilatation, first of the arterioles, then of the venules, then of the smaller arteries and veins, and finally of the larger arteries and veins. The outflow of blood from the veins of the affected viscera is considerably increased in all viscera of all mammals, but the change is more marked for some viscera than for others, and in some mammals than in others. Within an hour or a few hours after the lesion has been produced, the dilatation of the blood vessels seems to be associated with a slower flow of the blood and with increasing venosity of the blood of the capillaries. If the area so affected is considerable, as in the case of lesions affecting the splanchnic centers, the general blood pressure is considerably lowered.

Sections made of normal glands show a central core-like arrangement of blood cells within the capillaries, and this is surrounded by a peripheral layer of blood plasma. The blood cells are rarely in actual contact with the capillary walls. Sections made of the glands affected by a vertebral lesion show the capillaries densely filled with blood cells; the peripheral layer of plasma is rarely visible; the blood cells are closely packed against the capillary walls and diapedesis is seen to be occurring in many areas simultaneously. Areas in which such hemorrhages have occurred previously are scattered through the sections; in some of these the red cells are easily visible, in others they are partly degenerated, and in still other areas only a diffuse brownish stain remains of the blood pigment remaining from the digestion and absorption of the blood of earlier extravasations. These hemorrhages are always microscopic in size. The structural relations indicate that the diapedesis ceases when the blood coagulates. The extravascular cells and the clot are then digested and absorbed into the lymph channels. The reticulo-endothelial cells of the hemorrhagic areas contain pigment granules, apparently derived from the degenerating erythrocytes.

The secreting cells of the glands affected by vertebral lesions show characteristic changes. The differential staining of nucleus and protoplasm is less marked; nuclear stains tend to diffuse into the protoplasm and the nucleus is less sharply stained. Protoplasmic stains do not pro-

→

duce such sharp delineation of the protoplasmic structures. The granules characteristic of the different glands do not show their normal sharp staining. Cells near recent minute hemorrhages show early granular degeneration and cells in areas, which show evidences of several recurring hemorrhages often show fatty degeneration. In these areas fatty globes are sometimes found in the lymph channels of the affected tissue.

The tissue fluids of glands affected by vertebral lesions show diminished alkalinity.

The other changes in the secretions of the glands affected by vertebral lesions must be considered for each gland separately. This study is not yet completed for all secreting glands. The reports included in this *Bulletin* cover the work completed to date.

It should be noted that the diminished alkalinity, edema, recurrent petechial hemorrhages and cell degeneration found in the glands affected by bony lesions present a marked resemblance to similar conditions occurring in the small, deep spinal muscles in the lesioned area of the spinal column.

Generally speaking, there is a certain independence of physiological relations between the tissues innervated from

any segment of the spinal cord. Heat or chemical irritants applied to the skin over a spinal segment tend to dilate the blood vessels of viscera innervated from that segment; cold or other agents which contract the skin over any spinal segment tend to contract the blood vessels of the viscera innervated from that segment. The nerve irritation associated with abnormal articular relations of lesioned vertebrae tend to affect this circulation, secretion, and muscular activity of the active tissues innervated from the related spinal centers.

This independence is modified very considerably by other related activities. The antagonistic activities of nerve centers in the medulla, pons, basal ganglia and the lower lumbar and sacral centers interfere considerably with this independence of segmental relations. Certain internal secretions, and certain changes in the quality of the blood also affect the activities of glands and viscera.

The segmental relations are, however, so important and the reflex area concerned so direct and so simple in structure that the place of bony lesions in the etiology of disease is a very important one and the use of manipulations applied to the spinal column as a therapeutic measure may be very good or very bad, according to the skill or lack of skill on the part of the person who administers the treatment.

Resume of Human Findings

The records of the clinical laboratory of The A. T. Still Research Institute provide an opportunity for the study of the effects of osteopathic treatment upon the fluids of the human body. In this laboratory various tests are made for osteopathic physicians in practice. Whenever a patient seems suitable for exhaustive study, the tests are repeated at intervals during the time he is being treated and after the lesions have been corrected, sometimes for several years. Patients suffering from complicated diseases or from the results of several etiological factors are not often suitable for exhaustive study. From the records at hand the following resume has been prepared.

Lesions of the mandible, atlas, axis and the third cervical vertebrae caused the saliva to become less alkaline and to be deficient in amylolytic power in sixteen subjects. All of these suffered from some intractable, chronic infection of the mouth or the teeth. In twelve cases the lesions were corrected and the saliva returned to normal alkalinity and to normal amylolytic activity. In these cases the infection of the oral cavity yielded to ordinary aseptic washes after the lesions had been corrected. In four cases osteopathic treatments were not given and the infection persisted for

four months or longer, under ordinary medical antiseptic applications.

Lesions of the third and fourth thoracic vertebrae affect the heart. Characteristic changes in the blood and urine follow this lesion. The cardiac weakness is often recognizable by a study of the pulse and the blood pressure, especially when these are studied before and after each osteopathic treatment. In these cases the lungs are usually somewhat affected, either as a direct effect of the lesion upon the pulmonary circulation or as a result of the diminished efficiency of the heart. A small amount of sputum is often produced in the early morning, and more abundant sputum is produced upon any cause of bronchial irritation. This sputum contains characteristic, large, phagocytic cells filled with brownish granules of partly degenerated hemoglobin. These cells, which have been called "heart failure cells," are found in the sputum under several abnormal conditions, but when they are found in cases in which there is no evidence of pulmonary inflammation, they suggest weakened heart action.

Correction of the lesions mentioned results in recovery of normal cardiac activity if no serious structural change

has occurred in the heart muscle and if no infection of the endocardium has been present. If the lesions remain uncorrected, the disturbed circulation through the heart itself and through other important tissues of the body finally leads to incurable renal, cardiac, pulmonary, or hepatic disease. It must be remembered that while many other etiological factors may complicate the effects of vertebral lesions in human subjects, it is also true that such lesions may complicate and localize the effects of other etiological factors. A comparison of the vertebral lesions found at autopsy with the organs most seriously affected by toxemia, starvation or acute or chronic infections indicates this relation very clearly.

Five hundred and sixty cases have been studied of patients in whom the lesions of the third and fourth thoracic vertebrae were considered to be the sole, or the most important, etiological factor. Rib lesions were usually associated with the vertebral lesions in these cases.

Lesions of the flat bones, especially of the ribs, affect the red bone marrow and thus the blood-forming tissues. If any considerable area of red bone marrow is affected, the disease which was called "simple primary anemia" in older text-books was caused. This disease, now called "costogenic anemia" in osteopathic texts, speedily disappears when the lesions are corrected. Three hundred eighty-three cases were studied in which the lesions affecting the red bone marrow were considered the most important, if not the only, etiological factor in this form of anemia.

Lesions of the fifth and neighboring vertebrae cause hyperchlorhydria and are frequently associated with gastric ulcer. Lesions of the seventh and neighboring vertebrae cause hypochlorhydria and gastric atony. These conditions are further discussed in later sections of this *Bulletin*.

Lesions of the ninth thoracic vertebra and the ninth ribs cause the spleen to become congested and its capsule relaxed.

The leucocyte count increases, and symptoms of early spleno-medullary leukemia are frequently found. In early cases, correction of the lesion is followed by recovery. In late cases the symptoms are usually diminished, the patient is made more comfortable and his life prolonged by osteopathic treatment. Twenty-nine cases have been studied in which a lesion of the ninth thoracic vertebra caused an enlargement of the spleen with symptoms of early spleno-medullary leukemia.

Lesions of the tenth and neighboring thoracic vertebrae and ribs cause hyperemia of the liver and moderate cholemia. The bile pigments can be recognized in the blood plasma. The leucocytes show typical changes due to the cholemia. Bile pigments and sometimes bile acids may or may not appear in the urine in such cases. Correction of the lesion is followed by return to normal conditions in uncomplicated cases, in which the lesion is the chief, or the only, cause of the cholemia. Three hundred twelve cases

were studied in which the lesion seemed to be the chief cause of the cholemia. In one hundred two cases the abnormal condition had been present for many years, a moderate cirrhosis of the liver had occurred, and recovery was not complete. The symptoms diminished after correction of the lesion in seventy-three of these cases and the patients made a symptomatic recovery. In one hundred twenty-two cases the lesion was recent and recovery seemed complete after correction of the lesion. In the other cases no further history was secured.

Lesions of the ninth and tenth thoracic vertebrae affect sugar metabolism. Typical cases of diabetes mellitus are found in this group. Correction of the lesion exerts a favorable effect in nearly all such cases. Ten typical cases of diabetes mellitus remained sugar free on an adequate diet so long as the lesions were not permitted to recur. When osteopathic treatments were omitted, the blood sugar increased and urinary sugar appeared. Since the discovery of insulin it has become difficult to find suitable cases for study. Patients with moderately disturbed sugar metabolism recover normal metabolism after the lesions have been corrected. Sixty-one cases of disturbed sugar metabolism following or associated with lesions of the tenth thoracic and the ninth thoracic vertebrae and ribs have been studied, in which no insulin treatment had been employed.

Lesions of the eleventh and twelfth thoracic vertebrae affect the kidneys and cause occasional or persistent lobulinuria or albuminuria. Hyaline casts and an increase in the number of renal epithelial cells in the urine are found in persons with such lesions, though no symptoms of renal disease may be present. These conditions are more fully discussed in a later section of this *Bulletin*. Seven hundred fifty-six cases in which the lesions mentioned were apparently the chief or the sole cause of some type of nephropathy were studied. Correction of the lesion causes return to normal renal functions when the kidneys have not been too greatly injured by the abnormal conditions.

These records are too few to justify definite conclusions. The complicating factors of human living and human pathology enforce much more exhaustive study of many more cases before the place of vertebral lesions in etiology can be accurately delineated. The place of osteopathic correction of vertebral lesions in therapy can be adequately evaluated only after many more cases have been studied with care, and after the facts thus collected have been classified with critical attention.

Even these few records, however, plus the great mass of the osteopathic case records already published, do justify the conclusions that the vertebral lesion has an important place in etiology, and that the correction of such lesions is a very important factor in the treatment of certain human disease. □

American Academy of Osteopathy

“Building and Sustaining a Healthy Body through Nutrition, Exercise, and Posture”

Robert E. Irvin, DO, Program Chairperson

Monday, October 22 • Nutrition Section

- 8:00 am AOA Opening Session
- 9:10 *Welcome and overview of AAO Program* – Robert Irvin, DO, Program Chairperson
- 9:15 *Identification of optimal weight by nutritional assessment: the A,B,C,D&E's of nutritional assessment*
Elaine Jacobson, PhD and Michael Jacobson, PhD, Professors; Division of Clinical Nutrition, University of Kentucky
(This discusses evaluation of anthropometric, biochemical, clinical, dietary, and environmental factors that identify appropriate weight verses obesity or anorexia inducing behaviors. This is followed by dietary principles and how to choose a healthy diet that is balanced for metabolic needs. It includes an interactive session on assessment of a 24-hour recall diet. Then we discuss classification of obesity and the appropriate management of each class, e.g. 5-20% overweight, 20-40% overweight, etc.)
- 11:45 *T. L. Northup Lecture* – Ann L. Habenicht, DO, FAAO
- 3:00 pm *Assessing energy requirements* – Elaine Jacobson, PhD and Michael Jacobson, PhD
- 4:00 *Fads: the problem of a high protein diet* – Elaine Jacobson, PhD and Michael Jacobson, PhD
(Here is discussed the issue of fad diets, the metabolic basis of weight loss by a high protein diet, the clinical problems associated with excess protein, and a review of balanced diets as the appropriate way to achieve optimal health.)

Tuesday, October 23 • Exercise Section

- 8:00 am *Nutrition and exercise in ancient medicine*
Lesley Dean-Jones, PhD, Associate Professor, Department of Classics, University of Texas at Austin
- 9:00 *How and why we exercise*
Ray Moss, PhD, Professor, Dept. of Exercise Physiology and Biomechanics, Furman University, South Carolina
(This lecture is designed to familiarize the audience with the basics of motor function that will be alluded to throughout the lecture series. The MOTOR SCHEMA, as developed by Schmidt, will be the basis for this portion of the lecture. This will lead into the concept of why people exercise, and introduce possible strategies for motivating a more active life-style.)
- 10:00 *The Sedentary Life-style* – Ray Moss, PhD
(This lecture is designed to bring the audience up-to-date on the latest information linking morbidity and mortality to inactivity. Clearly, the sedentary life-style is a major risk factor for coronary heart disease, and data suggest it might play a major role in preventing some types of cancer. Exercise also has a positive impact on obesity, hypertension, depression and other chronic diseases. Part of the lecture will focus on changes in posture secondary to muscular weakness.)
- 11:00 am *Coding/Reimbursement Workshop* – Judith A. O'Connell, DO, FAAO

- 2:00 pm *Physiology of Human Performance* – Ray Moss, PhD
(These two lectures are designed to point out the compensatory mechanisms available, so the body may bring itself from rest to maximal exercise. The importance of genetics will be introduced. Various tests used to evaluate performance will be discussed. These lectures will also cover topics of maximal oxygen uptake, anaerobic threshold, muscular strength and muscular endurance.)
- 3:00 *Exercise, Nutrition and Calorie Costs* – Ray Moss, PhD
(This lecture is designed to cover the major aspects of nutrition and exercise in a range of populations from the weekend recreationalist to elite athletes. The topic of supplementation will be addressed. Discussion will include caloric costs of various exercise modalities, and what the clinician can reasonably expect from clients.)
- 4:00 *Pilates Exercise Lab – Part I*
Zoe Stein-Pierce, MFA, Dept. of Ballet and Modern Dance, Texas Christian University

Wednesday, October 24 • Postural Section

- 8:00 am *Interaction of the visual, vestibular, and somatosensory system in development, perception, and posture*
Frank Willard, PhD
- 10:00 *Concepts in ancient art and science from which are derived a comprehensive model of posture and chronic pain*
Robert E. Irvin, DO
- 11:00 *Clinical procedure for the alleviation of >90 percent of common, chronic pain by the optimization of posture by the integrated use of lifts (heel and ischial), contoured foot orthotics, osteopathic manipulative treatment, therapeutic postures, and (infrequently) an oral orthotic*
Robert E. Irvin, DO
- 3:00 *Pilates Exercise Lab – Part II*, Zoe Stein-Pierce, MFA

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November 30 - December 2, 2001

KENNETH J. LOSSING, DO, PROGRAM CHAIRPERSON

24 Category 1A CME

COURSE DESCRIPTION:

Visceral manipulation (general principles): • general listening and local listening; • liver, gall bladder, stomach, duodenum, small intestine, large intestine, sphincters.

This course provides a theoretical background for subsequent courses using the gastrointestinal system as a model. Issues of induced motion (mobility), inherent motion (motility), ligamentous attachments, sympathetic and parasympathetic innervation are discussed. Diagnosis and treatment interventions such as general listening, local listening, and inhibition, ligamentous tension, short and long lever arm techniques are taught.

In this course, the role of the visceral dysfunction in various diagnoses is explored: e.a. gastroesophageal reflux disease, dyspepsia, hiatal hernias, peptic ulcers, acute and recurrent midthoracic pain, cholestasis, cholelithiasis, biliary congestion, recurrent left shoulder pain, recurrent right shoulder pain, sinusitis, hepatitis, irritable bowel, constipation, thoracolumbar pain, pelvic pain, low back pain, and recurrent SI dysfunction.

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UAAO Addresses AAO Members

This year is going to be a busy year for the UAAO! Here are just a couple things we have planned for the year:

The Undergraduate American Academy of Osteopathy (UAAO) sponsors the Vicki Dyson Preceptor Scholarship for the student interested in osteopathic manipulation. This year we have 8 scholarships available for an osteopathic student who is a member of the UAAO and completes a 4 week elective rotation in osteopathic manipulative medicine (OMM). They will receive up to \$400 in scholarship money. This OMM rotation must be done in the practice of an osteopathic physician who is on the Vicki Dyson Preceptor list. We need physician volunteers who will offer their time to invite 3rd and/or 4th year students into their practice for the rotation. In order to qualify as a preceptor for the Vicki Dyson Preceptor list, a physician must meet 3 basic requirements:

1. The physician must be a DO.
2. The physician must be a member of the American Academy of Osteopathy (AAO).
3. The physician's practice time should be composed of at least 50% osteopathic manipulative medicine (OMM) or the physician should treat at least 20 patients per week with osteopathic manipulative medicine (OMM).

If you are interested in applying to be a preceptor for the Vicki Dyson Scholarship program or if you are a student interested in the scholarship please e-mail me at uaaochair@aol.com.

The American Osteopathic Foundation has graciously funded the UAAO's Visiting Clinician Program. Each of the 19 osteopathic colleges has the opportunity to invite a clinician to lecture about osteopathic manipulation at their school. It is one of the biggest selling points for the UAAO membership drive and we look forward to planning our lectures this year at each school.

We are currently working on our new and improved web page. It will contain information about each of 19 UAAO chapters. We will have e-mail contacts, calendar of events, and even an application for our Vicki Dyson Preceptor list ready for you to print out or email back to us!! Coming soon to the Academy web page, www.academyofosteopathy.org!

We thank you for all of your support!

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Osteopathic manipulative treatment of low back pain during labor

Scott Carpenter, OMS-III and Adrian Woolley, DO
Des Moines University-Osteopathic Medical Center

Abstract

Low back pain is among the most common complications during pregnancy and labor, reported in over one half of all pregnancies. Therefore, the physician must effectively address this pain for the most efficient parturition experience. This case presents many implications for osteopathic manipulative treatment and its effectiveness in treating back pain concurrent with parturition.

Somatic dysfunctions corresponding to pain sensations are common ailments during pregnancy and, thus, osteopathic manipulative treatment is uniquely suited to treating the biomechanical challenges of pregnancy. We review the indications for and possible physiologic mechanisms of different manipulative techniques for treatment of back pain in the pregnant patient, with emphasis on the role of osteopathic manipulative medicine during the parturient experience.

Case Presentation

A 23-year-old nullipara, prima gravida female presented at 39 weeks of gestation with complaints of low back pain and potential latent labor. The patient was under the supervision of a certified nurse midwife. For the previous three weeks, the patient had experienced Braxton-Hicks contrac-

tions that she described as a 1-2/10 (0-not sure she was experiencing a contraction, and 10- she does not think she will survive the contraction). The contractions were centered on her lower back with radiation to the anterior abdomen, which made it "awkward to move". Seen the day prior in her home by the nurse midwife, she was dilated 2 centimeters, 90% effaced, 0 station with a posteriorly oriented cervix. The following morning at 5:00 AM, the patient experienced contractions of sudden onset and intensity of 4-5/10. The contractions occurred roughly every 6 minutes with duration of 30-40 seconds and localized in the uterus and lower back without radiation. The nurse midwife was notified at 8:00 AM. Upon examination, the patient's cervix was dilated 2 cm, 100% effaced, oriented midplane and 0 station. The patient returned home to rest. At 3:00 PM, the nurse midwife again examined her, at which time station was + 1. The midwife remained with the patient from then until parturition.

There was no pertinent past medical history. Her past surgical history included an appendectomy one year earlier. There was no history of abnormal PAP smear. A strong maternal history of thyroid disease and paternal history of hypertension existed.

The patient's only surgery was the appendectomy. There was no history of cryosurgery or LEEP procedures. She had no known drug, food or environmental allergies. Her medications consisted of prenatal vitamins and Evening Primrose oil for topical application to the cervix. She was currently married and had no history of tobacco, alcohol or illicit drug use or any history of sexually transmitted diseases.

During the course of her pregnancy, she regularly visited with the nurse midwife every 3 weeks until the eighth month, during which she met with her regularly every 2 weeks and every week during the last month. Additionally, she had been receiving osteopathic manipulative treatments throughout her pregnancy. The medical history during the course of the pregnancy included a positive vaginal culture of group D streptococcus that presented at 7 weeks as vaginal irritation, and recurrent episodes of sinusitis and sinus congestion from week 25 to week 31.

Additionally, a yeast infection was discovered and successfully treated at week 36.

At the time of the author's initial structural assessment, the patient's cervix was still dilated 2 cm, with irregularly timed though intense contractions, and complaining of pain

composed more of back pain than contraction pain. Treatment began at approximately 4:15 PM. Between contractions, manipulative techniques were performed with the patient in both supine and lateral recumbent positions. The regimen consisted of treating the long restrictors (hamstrings), supine thoracolumbar soft tissue, the frog leg technique for lumbar and sacral dysfunction, bilateral supine rib raising, HVLA for the thoracic inlet, and soft tissue and HVLA techniques for the cervical spine. During the course of the treatment, the pain shifted from the lower back to the right sacroiliac joint and the anterior, inferior portion of the abdomen, such that she could not lie in a supine position. While in the left lateral recumbent position, more rib raising was performed and lateral Simms mobilization was performed to treat the sacroiliac pain. At 6:00 PM she was again examined by the midwife, after which treatment was discontinued.

During the two-hour course of treatment, the patient's cervix dilated to 8 centimeters, 100% effaced with contractions of 3-4 minute frequency and 20-second duration, focused at the anterior, inferior portion of the abdomen. At 6:30 PM, the patient had dilated further to 8 cm and 4+ station, and to 10 cm and 3+ station at 7:45 PM. Spontaneous rupture of the

membranes occurred at 7:36 PM, and the patient gave birth at 8:15 PM to an 8 lb. 4 oz. male with a 1 minute Apgar of 9 and 5 minute Apgar of 10. A periurethral tear did occur which was repaired. The patient was in labor for approximately 8 hours and 15 minutes.

Discussion

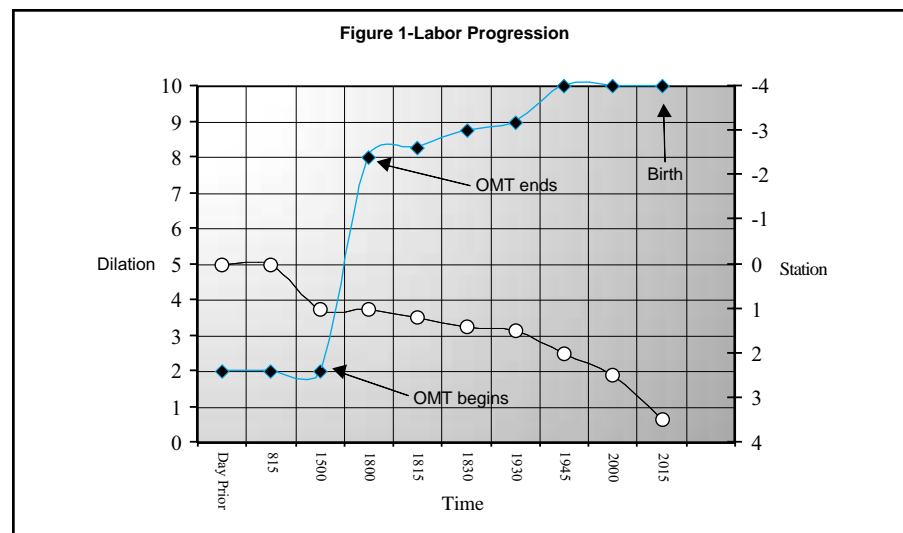
Low back pain is among the most common complications during pregnancy and labor, reported in over one half of all pregnancies.¹ In fact, low-back pain is reportedly the most severe complication in a substantial proportion of those pregnancies. One study found that although contraction pains are usually described as the worst pain, the importance of continuous low-back pain lies in its unrelenting and exhausting nature.² Therefore, the physician must effectively address this pain for the most efficient parturition experience.

This case presents many implications for osteopathic manipulative treatment and its effectiveness in treating back pain concurrent with parturition. Pain was of primary concern by the health care team in this situation, fearing that if the back pain were not controlled, the patient would be unable to assist in parturition due to exhaustion. Pain management through osteopathic manipulative treatment allowed the patient to fully concentrate on the labor at hand. Dur-

ing the treatment process, the nature and quality of contractions changed from ineffective back labor to effective abdominal contractions of increasing strength and timing. Additionally the cervix, which was not progressing appropriately, dilated a full 3 centimeters during the course of the treatment. Although it cannot be determined whether this was due to the physiologic or psychological effects of pain management or to a physiological response by the uterus to the structural manipulation, the simultaneous timing of manipulative treatment and change in the nature and quality of contraction suggests a correlation.

Somatic dysfunctions corresponding to pain sensations are common ailments during pregnancy. Berg et al report 49% of patients complain of significant lumbar dysfunction and 67% of sacroiliac dysfunction, with 33% of those patients complaining of corresponding pubic symphysis dysfunction.³ One study reported 91% of these complaints were relieved with manipulation.⁴ These findings allude to the efficacy of manipulative treatment for treatment of low back pain during pregnancy and labor.

Osteopathic manipulative treatment is uniquely suited to treating the biomechanical challenges of pregnancy. Postural changes from the increased weight bearing of pregnancy increase the physiologic stress on the lumbar spine and hyperlordosis ensues. This subsequently leads to increased tension of the myofascial and ligamentous elements of the lumbosacral complex.^{5,6} As lordosis increases, the abdominal muscles and their investing fasciae are continually pulled and stretched; resulting in a depressed anterior thorax compensated for by an increased anteroposterior and transverse diameter of the chest. This compromises normal respiratory movement and pressure gradients affecting the normal flow of fluid in the body.⁷ Additionally, myofascial torsion in the diaphragms



of the body leads to impaired lymphatic and venous flow. The reestablishment of normal physiological movement of the rib cage, thoracic spine and transitional areas of the body allows for normal diaphragmatic excursion and increased venous and lymphatic flow back toward the heart. This helps ameliorate the peripheral edema and cramping and improve fluid and electrolyte mechanisms.⁸ Thus, the treatment of a pregnant patient should include manipulation of every transitional area.

Many authors of both osteopathic and allied health backgrounds have found certain techniques very effective to treat the somatic dysfunctions of pregnancy. Indications for the frog leg technique and its variations include treatment of the hyperlordosis and for myofascial relief of sacroiliac dysfunction due to sacral rotation.⁹ The frog leg technique may also be performed into the lower thoracic spine with minimal variation allowing the physician to similarly treat the entire lumbar and lower dorsal areas as well as the crura of the diaphragm.¹⁰ The addition of swaying or rocking movements can also be palliative for the discomfort of contractions,¹¹ and may work in concert with this technique.¹²

Inhibitory manipulation is beneficial by its ability to affect the anatomy of sensory output from the gravid uterus. Differing visceral afferent and efferent pathways mediate uterine contractions and pain sensation during the first and second stages of labor: the tenth thoracic to first lumbar segments mediating the first stage, and the second to fourth sacral segments mediating the second.¹³ Inhibitory pressure placed in these areas reportedly provides 80-100% relief in a majority of the patients studied (65%).¹⁴ Another suggested etiology of back pain is skeletal muscle spasm due to a viscerosomatic response from these areas.¹⁵ Thus, both inhibitory pressure as well as manipulative treatments to relieve muscle spasm

could prove quite useful in relieving viscerosomatic pain. Other techniques mentioned in the literature include isolytic techniques for pubic symphysis dysfunction;¹⁶ sacral rotational manipulation,¹⁷ lateral Simms mobilization, and supine ischial tube spread for sacral dysfunction; and static and dynamic extension or flexion maneuvers as indicated for low-back pain.¹⁸

The onset of manipulative treatment and the simultaneous change in the location and quality of contractions is hard to ignore. Although there is said to be many such experiences, no reports of an empirical or anecdotal nature could be found in the literature. However, this case suggests that OMT could be effective not only in the treatment of pain during labor, but may also effectively mediate the transition from latent to active labor. Many etiologies of back pain alone have been reported in the literature, from postural changes to viscerosomatic reflexes due to contraction of the gravid uterus all of which lend some possible explanation to the effectiveness of OMT in management of back pain during labor. Future empirical study needs to be performed concerning the physiological responses of the gravid uterus to osteopathic manipulation and the physiological and psychological events experienced by the patient from the perspective of pain management.

References

1. Rungee, James L MD. Low-back pain during pregnancy. *Orthopedics*. July 1993;16:7:1339.
2. Melzack, Ronald, PhD and Schaffelberg, David, MD. Low-back pain during labor. *American Journal of Obstetrics and Gynecology*. April 1987;156:4:903.
3. Berg, Coran, MD; Hammar, Mats, MD; Moller-Nielsen, Jesper, MD; Linden, Ulf, MD; and Throblad, Jan, MD. Low-back pain during pregnancy. *Obstetrics and Gynecology*. January 1988;71:1:73.
4. Daly, Jeffrey M; Frame, Paul S, MD; and Rapoza, Paul A, MD. Sacroiliac subluxation: A common, treatable cause of low-back pain in pregnancy. *Family Practice Research Journal*. 1991;11: 2:158.

5. Rungee, James L, MD. Low-back pain during pregnancy. *Orthopedics*. July 1993;16:7:1340.
6. Zink, J. Gordon, DO and Lawson, William B, PhD. Pressure gradients in the osteopathic manipulative management of the obstetric patient. *Osteopathic Annals*. January 1979;7:1:28.
7. Zink, J. Gordon, DO and Lawson, William B, PhD. Pressure gradients in the osteopathic manipulative management of the obstetric patient. *Osteopathic Annals*. January 1979;7:1:41-5.
8. Stiles, Edward G, DO. Osteopathic manipulation in a hospital environment. *Journal of the American Osteopathic Association*. December 1976;76:247.
9. Petrie, Kent A, MD and Peck, Marc R, MD. Alternative medicine in maternity care. *Primary Care: Clinics in Office Practice*. March 2000;27:1:125.
10. Zink, J. Gordon, DO and Lawson, William B, PhD. Pressure gradients in the osteopathic manipulative management of the obstetric patient. *Osteopathic Annals*. January 1979;7:1:48.
11. Lowe, Nanacy K, CNM, PhD. The pain and discomfort of labor and birth. *Journal of Obstetric, Gynecological, and Neonatal Nursing*. January 1996;25:1:89.
12. Petrie, Kent A, MD and Peck, Marc R, MD. Alternative medicine in maternity care. *Primary Care: Clinics in Office Practice*. March 2000;27:1:125.
13. Lowe, Nanacy K, CNM, PhD. The pain and discomfort of labor and birth. *Journal of Obstetric, Gynecological, and Neonatal Nursing*. January 1996;25:1:83.
14. Gurthrie, RA, DO. Lumbar inhibitory pressure for lumbar myalgia during contractions of the gravid uterus at term. *Journal of Manipulative and Physiological Therapeutics*. November/December 1991;14:1-9:265.
15. Melzack, Ronald, PhD and Schaffelberg, David, MD. Low-back pain during labor. *American Journal of Obstetrics and Gynecology*. April 1987;156:4:903.
16. Petrie, Kent A, MD and Peck, Marc R, MD. Alternative medicine in maternity care. *Primary Care: Clinics in Office Practice*. March 2000;27:1:125.
17. Daly, Jeffrey M; Frame, Paul S, MD; and Rapoza, Paul A, MD. Sacroiliac subluxation: A common treatable cause of low back pain in pregnancy. *Family Practice Research Journal*, 1991;11:2:158.
18. Rath, Jean Duffy, PT, Dip MDT; Rath, Wayne, PT, Dip MDT; Mielcarski, Elaine, ACCE, CNM, MS, NP; and Waldman, Richard, MD. Low back pain during pregnancy: Helping patients take control. *The Journal of Musculoskeletal Medicine*, April 2000;231-32□

Osteopathic treatment of nephrotic syndrome

by Sonia Rivera-Martinez, OMS-IV and John D. Capobianco, DO
New York College of Osteopathic Medicine, New York Institute of Technology

Abstract

The following case illustrates the hospital management and subsequent osteopathic treatment of nephrotic syndrome in a 19-year-old African American female with past history of IgA nephropathy. IgA nephropathy is uncommon in both females and in those of African American descent. In addition, less than 10 percent of patients with IgA nephropathy present with nephrotic range proteinuria. Although her initial presentation was oliguria and peripheral edema, she was unresponsive to diuretics, albumin infusion and dietary restrictions and thusly developed anasarca. Osteopathic manipulative treatment was successfully instituted on the fifth day of hospitalization as evidenced by the diuresis of 400 cc's shortly after treatment and the eventual loss of all the water weight gained. Furthermore, the patient avoided therapy with cyclophosphamide, a cytotoxic drug.

Introduction

Nephrotic syndrome is a clinical state characterized by increased glomerular permeability manifested by:¹

- Proteinuria (>3.5 g/24 hr/ 1.73 m²)
- Hypoalbuminemia (serum albumin <3.5 g/dl)
- Hypercholesterolemia >200 mg/dl
- Peripheral edema \pm anasarca

The incidence of nephrotic syndrome in children 1.5 to 6 years of age in the U.S. is 2:100,000. Adults of all ages are affected in a ratio of 3:100,000. Minimal Change disease is the most

common primary cause of nephrotic syndrome in children. For adults in the U.S. it is focal segmental glomerulosclerosis and membranous glomerulonephritis. The most common etiologies are glomerular diseases. Other causes include carcinomas, diabetes mellitus, systemic sensitivity diseases, nephrotoxins and allergies.^{2,3}

Signs and symptoms of nephrotic syndrome include: fatigue, abdominal distention, ascites, edema, oliguria and weight gain.

In this patient, nephrotic syndrome presented as a complication to IgA nephropathy. IgA nephropathy or Berger's disease is a common form of glomerular disease. This disorder is more common in males, uncommon in blacks in the U.S. and typically presents between the ages of 10 and 50. IgA immune complexes in the mesangium of the glomeruli characterize the renal biopsy. The most common presenting symptom of IgA nephropathy is persistent or recurrent macroscopic hematuria. Episodes of macroscopic hematuria frequently follow after an upper respiratory or gastrointestinal tract infection. In these patients, mild proteinuria may present in the range 1-2 g/day. Less than 10 percent will present with nephrotic syndrome.^{4,5}

Report of Case

This patient is a 19-year-old African American female with recent medical history significant for gross hematuria secondary to IgA nephropathy diagnosed by renal biopsy (7/99) one month prior to this hospital admission. Her chief complaints for this

admission were fatigue, reduced appetite, abdominal distension, peripheral and facial edema, decreased urine output and weight gain. Prior to the onset of the edema, her urine appeared foamy and pinkish. A week later her eyelids and fingers were puffy. The edema rapidly progressed to her ankles and feet, followed by abdominal distention. She came to the emergency room when she noticed a significant decrease in urine output.

Her past medical and surgical history was significant for bronchopneumonia (6/99) and appendectomy (6/97). She had no other autoimmune disorders. Physical examination was remarkable for facial and peripheral edema and abdominal distention with a positive fluid wave. Osteopathic examination revealed tissue texture changes, asymmetry, restricted motion and tenderness at T10-11 and Chapman's reflexes superior and lateral to the umbilicus and between the spinous and transverse processes of T12 and L1. These viscerosomatic findings correlate with disorders of the kidney.⁶ In addition, occipital, sacroiliac, rib and numerous non-neutral vertebral segmental dysfunctions were noted. Laboratory findings demonstrated proteinuria, hypoalbuminemia, elevated cholesterol and triglyceride levels and ascites on abdominal x-ray.

Assessment

1. Nephrotic syndrome secondary to IgA nephropathy.
2. Somatic dysfunction of the cranium, cervicothoracic, rib, thoracolumbar and pelvic regions.

Table 1

Physical and Laboratory Findings on Admission

Physical Examination

- **VS:** BP 120/80 HR 76 RR 14 T 98.4
Usual Wt: 165 lbs.
Admission Wt: 171 lbs.
- **Gen:** Well developed, slightly overweight AAF female with facial edema in NAD
- **Skin:** No erythema, no rashes, warm, dry
- **HEENT:** NC/AT, EOMI, PERRLA, non-icteric, non-injected, periorbital edema; B/L TMI; nares patent, no discharge, pink mucous membranes, non-inflamed; pharynx and tonsils non-injected, no erythema, no exudates
- **Neck:** Supple, no palpable nodes, no JVD, no thyromegaly
- **Lungs:** B/L CTA and P
- **CVS:** +S1 & S2, no S3, no M/R/G
- **Abd:** Mildly distended, +BS x 4, Soft, NT, no organomegaly, positive fluid wave
- **GU/Rectal:** Refused
- **Ext:** B/L LE pitting edema to mid-calves, B/L UE edema to distal forearm, Pulses +2: radial, femoral, popliteal, posterior tibial, dorsalis pedis
- **Neuro:** AAOx3, DTR 2/4, strength 5/5

Osteopathic Structural Exam

- **Cranium:** Rt SB/R, OA compression, Lt OM compression
- **Cervical:** C3ESrRr, C4ESrRr
- **Thoracic:** T6FSIRl, T9ESrRr, T10ESrRr, T11ESIRl
- **Ribs:** Exhalation restriction of Lt 1st rib and ribs 5 to 8 B/L
- **Thoracic Diaphragm:** Ant. and post. restriction Lt > Rt
- **Lumbar:** L1FSIRl, L2FSrRr, L5ESrRr
- **Sacrum:** Sacroiliac joint restriction Lt>Rt
- **Chapman's Reflexes:** Superior and lateral to the umbilicus and between the spinous and transverse processes of T12 and L1

Laboratory Findings

- **CBC/Electrolytes:** within normal range
- **UA:** 4+ protein & 4 RBC/hpf, otherwise normal
- **24 hour urine protein:** 8.7 g/day
- **CXR:** Normal
- **Urine protein/creatinine ratio:** 4.0
- **Serum Albumin:** 1.9 g/dl
- **Cholesterol Total:** 235 mg/dl
- **Triglycerides:** 330 mg/dl
- **AXR:** Ascites

Discussion

The pathophysiology of nephrotic syndrome presents when alterations of the glomeruli permeability leads to massive proteinuria followed by hypoalbuminemia. The decrease in albumin produces a reduction of plasma oncotic pressure, which causes a shift of intravascular fluids into the interstitial space. These changes eventually result in edema, anasarca, ascites and a fall in effective blood volume. A vicious cycle develops when the regulatory mechanisms attempt to restore the effective blood volume by activating the renin-angiotensin-aldosterone axis and the sympathetic arm of the autonomic nervous system. The body's attempt to restore effective blood volume by these mechanisms further aggravates the retention of fluid in the interstitium. Excessive fluid in the third space interferes with the return to homeostasis since it leads to increased interstitial pressure and the collapse of the lymphatic capillaries. In addition, edema causes dilation of the lymphatic capillaries disabling the flap valves. The effects of excess sympathetic stimulation on the lymphatics are vasoconstrictive, inhibiting the intrinsic pump of the lymphatic capillaries and the overall forward flow of fluid into the venous circulation. Exacerbation of the central, peripheral and generalized tissue edema ensues. These factors together with activation of the renin-angiotensin-aldosterone overload the absorptive and propulsive capabilities of the lymphatic system. All of these factors are exacerbated in a patient with renal disease.^{7,8}

Medical management of this patient was geared towards controlling the edema by diuresis. She was placed on a salt and fluid restriction diet, intravenous diuretics and albumin infusion (Table 2). Albumin works by transiently increasing the

Table 2		
Treatment Plan for R.S.		
Medical Management		
* Salt restricted diet to 2 mEq/Kg/Qd	* Then Furosemide IVPB 2mg/Kg/Q3h x 2 doses titrated	
* Albumin IV 1g/Kg/Qd	* Hydrochlorothiazide PO 50mg Q12h	
* Furosemide IVPB 2mg/Kg 15 minutes post albumin infusion	* Fluid restricted to ½ x maintenance	
Osteopathic Treatment		
Sympathetic Nervous System	Lymphatic System	Parasympathetic Nervous System
* Chapman Reflexes	* CV4, EV4, Thoracic & Pedal Pump	* OA Decompression
* Rib Raising	* Release of: Thoracic Inlet, Thoraco-abdominal Diaphragm, Pelvic Diaphragm, Popliteal Fossa	* OM Decompression
* Treatment of Cervical, Thoracic & Lumbar Spine by: BLT, FPR, ME, MFR	* Effleurage: UE, LE, Head	* Sacral Balancing

plasma oncotic pressure and is mostly excreted within 24 hours post infusion.⁹ This combination therapy usually causes diuresis within 1/2 hour to 1 hour after infusion. However this was not the case for this patient. Despite conventional therapy over the next 4 days her condition worsened. The patient continued to be oliguric and developed anasarca. Although the next course of action was to place this patient on cyclophosphamide an osteopathic consultation was ordered.

The osteopathic treatment plan for this patient was modeled after Kuchera and Kuchera's approach to systemic dysfunction.¹⁰ Osteopathic manipulative treatment was initiated on hospital day 5; 20 hours after her last albumin infusion. The goal was to normalize her autonomics and maximize the lymphatics ability to mobilize fluid trapped in the intercellular space. In his article entitled: "Autonomic stress and the musculoskeletal system", Dr. Robert Thorpe describes the "musculoskeletal ready state" as a primary response to the activation of the sympathetic nervous system.¹¹ Clearly this patient faced not only physiological stress, but also the added burden of hospitalization. This excessive sympathetic hyperactivity was addressed with rib raising along

the lower thoracic and upper lumbar spinal region,¹² the area of the cell bodies of the sympathetic fibers to superior and inferior mesenteric ganglia and ultimately the genitourinary tract. In addition, Chapman's viscerosomatic reflex points for the kidney were treated to further normalize sympathetonia, lymph flow and decrease myofascial restrictions.¹² There are published case studies whereby osteopathic treatment have decreased serum aldosterone, blood urea nitrogen and improved urinary output by use of Chapman's reflexes and treatment directed to the thoracolumbar region.^{13,14}

Treatment of the parasympathetic and somatic innervation to the kidney and pelvic diaphragm were accomplished by suboccipital and sacroiliac release techniques. The vagus and pelvic splanchnic nerves maintain normal peristalsis of the ureters.¹⁰ Normalization of the autonomic nervous system in a renal patient results in increased blood supply to the glomeruli by decreasing the afferent arteriolar vasoconstriction.¹⁰ This in turn leads to an increased glomerular filtration rate and thereby an increased urine output. Increased perfusion to the kidneys halts the vicious cycle initiated by the constant activation of

the renin-angiotensin-aldosterone and the sympathetic nervous system. Furthermore, reduction of the hypersympathetic activity to the thoracic duct and other large lymphatic channels improves lymphatic flow capacity and drainage as the sympathetics constrict the lymphatic capillaries and ducts.⁸

The diaphragms treated were Sibson's fascia of the cervicothoracic inlet, and the thoracoabdominopelvic cylinder. Restoration of synchronous motion to the thoracic and pelvic diaphragms is necessary since these transverse structures act as extrinsic pumps to the lymphatic system and maintains pressure gradients necessary for the return of lymph and venous blood back into circulation.⁸ Release of restrictions to the thoracic inlet allows for improved drainage from the thoracic duct into the venous circulation. Additionally, the pedal pump of Dalrymple and thoracic pump of Miller were used in conjunction with effleurage. (Table 2) This enhanced the lymphatics ability to return interstitial fluid to the central circulation, ultimately to be excreted. Improving the lymphatic drainage increases resorption of fluids from the interstitium, which leads to a decrease in interstitial oncotic pressure.⁸ The decrease in interstitial oncotic pressure allows fluid return into the lymphatics promoting proper fluid balance, the purification and cleansing of tissues and ultimately a decrease of the edema.⁸ Moreover, in a fluid overload state, urine is removed from the kidney via the lymphatics.¹⁰

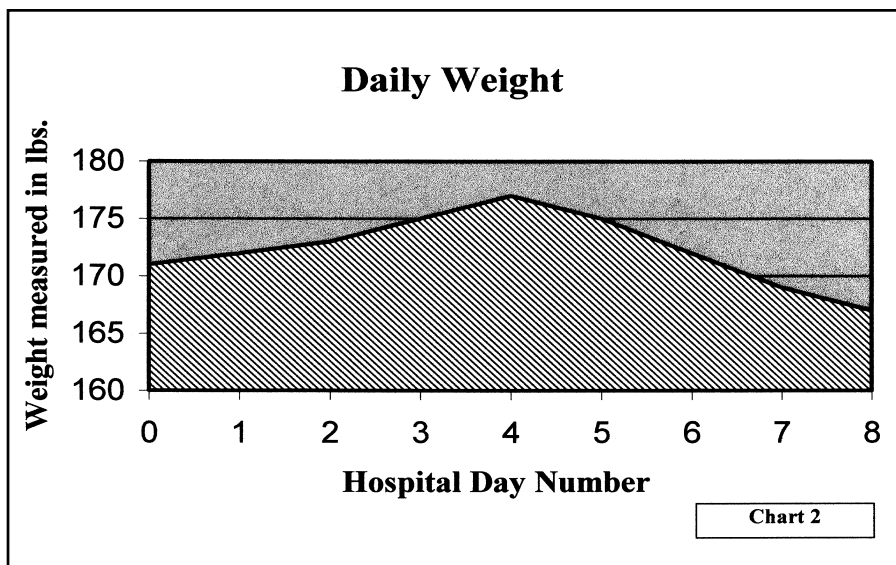
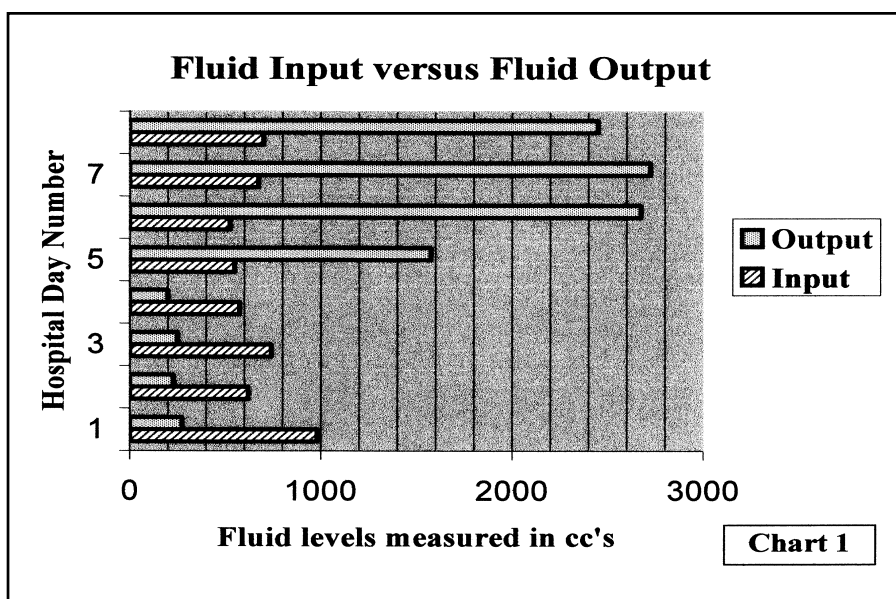
The results of the osteopathic treatment were dramatic. Within 45 minutes post treatment the patient voided 400 cc's, almost double the urine output for any 1 of the previous days. She continued to void copiously and lost the weight gained due to water retention. Importantly, the patient was spared from treatment with cyclophosphamide since her condition dramatically improved. Chart 1 demon-

strates the difference between fluid input versus fluid output. Fluid intake was relatively the same throughout the patient's hospitalization. Prior to the osteopathic treatment the daily urine output averaged between 200 and 275 cc's. In fact, the patient had voided only 100 cc's approximately 30 minutes prior to initiating osteopathic treatment. Post treatment the urine output increased to 1575 on day five, to a high of 2725 on day seven. Chart 2 illustrates the pre-treatment weight gain and post-treatment weight loss. The patient was discharged on day 8.

Comment

This patient was refractory to treatment by salt and fluid restriction diet, diuretics and albumin infusion. The osteopathic manipulative treatment addressed the autonomic lymphatic and musculoskeletal systems. Specific modalities utilized included Chapman's reflexes, supine rib raising, fascial-ligamentous release, muscle energy, lymphatic pumps, and osteopathic treatment in the craniosacral field. The response to osteopathic treatment was improvement of lymphatic drainage increasing the re-

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sorption of third space fluid leading to diuresis and reduction of the generalized edema. These results demonstrate the effectiveness of incorporating osteopathic manipulative medicine in the treatment of the acute, toxic hospitalized patient, in this case nephrotic syndrome.

References

1. Tisher CC, Wilcox CS. *Nephrology*. Baltimore, MD. William and Wilkins. 1995:30.
2. Dambro MR, Ed. *Griffith's 5 Minute Clinical Consult 2000*. Philadelphia, PA. Lippincott. Williams and Wilkins. 2000:724.
3. Salcedo JR, Thabet MS, Latta K, Chan JCM. Nephrosis in childhood. *Nephron*. 1995;71:373-385.
4. Brenner BM, Rector FC. *The Kidney*. 5th ed. Philadelphia, PA. WB Saunders Company. 1996:2:1414-1421.
5. Yoshikawa N, Iijima K, Ito H. IgA nephropathy in children. *Nephron*. 1999;83:1-12.
6. Johnston WL, Kelso AF, Hollandsworth DL, Karrat JJ. Somatic manifestation in renal disease: A clinical research study. *JAOA*. 1987; 87:22-35.
7. Schrier RW, Ootsschalk CW, Eds. *Disease of the Kidney*. 6th ed. Boston, MA. Little Brown and Company. 1997:1725-1731,1747-1764.
8. Wallace E, McPartland JM, Jones JM III, Kuchera WA, Buser BR. Lymphatic system: lymphatic manipulative techniques. In: Ward RC, ed. *Foundations for Osteopathic Medicine*. Baltimore, MD. William and Wilkins. 1997:941-948.
9. Massry SO, Olassock RJ. *Textbook of Nephrology*. 3rd ed. Baltimore, MD. William and Wilkins. 1995:694-695.
10. Kuchera ML, Kuchera W A. *Osteopathic Considerations in Systemic Dysfunction*. 2nd ed. Columbus, OH. GreydenPress. 1994:127,133.
11. Thorpe RG. Autonomic stress and the musculoskeletal system. *Osteopathic Annals*. 1979;12:20-23.
12. Kuchera W A, Kuchera ML. *Osteopathic Principles in Practice*. Revised 2nd ed. Columbus, OH. GreydenPress. 1992:73-74,229.
13. Mannino JR. The Application of neurologic reflexes to the treatment of hypertension. *JAOA*. 1979;79:225-231.
14. Sterett HW Jr. Disorders of the urinary system. In: Hoag JM, ed. *Osteopathic Medicine*. New York, NY. McGraw-Hill. 1969:664.

continued from page 6
President's Message

exam in the near future. The Educational Council on Osteopathic Principles, who are all Academy members, works with the schools through the American Association of Colleges of Osteopathic Medicine, and is actively involved in the process.

The current trend of decreasing use osteopathic manipulative treatment in practice is easy to predict when the only organized training a student receives is during the first two years of osteopathic medical school. A requirement for a minimum number of osteopathic manipulative treatments and passage of a proficiency exam is not intended to be punitive. To the contrary, it would provide the structure for developing skill, confidence and demonstrating the benefit of osteopathic care in the management of patients. Just as important would be the demonstration of the unique contribution of osteopathic medicine to health care. □

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Osteopathic treatment by injection: A comparison of osteopathic manipulative treatment and neural therapy

by Robert Kidd, MD, Renfrew, Ontario, Canada

Introduction

Among medical systems, a major distinction of osteopathy has been its emphasis on “finding health” rather than treating disease. Although A. T. Still introduced this idea in the late 1800s it has a decidedly modern feel to it, and in the 21st Century may be finally coming of age.

Central to Still’s concept of health was the notion of unobstructed flow of blood to all tissues of the body, providing nourishment and elimination of waste products. The osteopath’s task was to use his knowledge of anatomy and physiology to find the obstruction and then to remove it.

To Still, obstruction resulted from abnormal mechanics, and treatment of abnormal mechanics (the osteopathic lesion) was the logical solution to problems of health. Over the next hundred years these principles were developed and refined to build a complex theory and practice of osteopathic manipulative treatment (OMT).

Mid-way through the twentieth century, new discoveries in neurophysiology forced a major rethinking of the nature of the osteopathic lesion. The osteopathic lesion was found to be more than just mechanical dys-

function; it was also a manifestation of neurological input from mechanoreceptors in the connective tissues, from sensors in the skin and vis-

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cera, from autonomic ganglia, from facilitated segments of the spinal cord, and from higher centers of the central nervous system, including the cerebral cortex.

Although osteopathic theory was enriched by these discoveries, OMT was only minimally affected. The major therapeutic tool of osteopathy has continued to be manipulation and Still’s mechanical model has proven to be more than adequate in this regard. However, if one considers the philosophical ideas behind osteopa-

thy, it may be that the lack of application of this new scientific knowledge in new ways represents a missed opportunity in the development of osteopathy.

No one has contributed more to the neurophysiological understanding of osteopathy than Irvin Korr. Not only did he conduct important original research, but he also interpreted for clinicians the significance of much of the then existing science. His 1948 paper, “The emerging concept of the osteopathic lesion”¹, contains a masterful review of the classical literature on this subject, with many potential clinical pearls. Among these pearls are reports (from several authors) that the vicious cycle of muscle spasm - neurological facilitation - muscle spasm can be broken not only by manipulation, but also by appropriately directed injections of procaine.²⁻⁸

Korr’s intention in this paper was not to expand the scope of osteopathic practice but rather to help explain already observed clinical phenomena. One might wonder however why these observations were not picked up and explored by osteopathic clinicians of the time. Their albeit intuitive understanding of the autonomic nervous system and the importance

of the extracellular space placed them in the best position possible to benefit from this new scientific knowledge. Nevertheless, the opportunity was passed over. Only sporadic and piecemeal attempts to use procaine were made by (mostly allopathic) physicians in North America.

History of Neural Therapy

In the meantime, on another continent, and in another language, a small group of German clinicians were also exploring applications of existing neurophysiological knowledge. They had no knowledge of osteopathy and were coming from quite a different direction. They were aware of the same literature that Korr had used to develop his “emerging concept of the osteopathic lesion” but were using it to help explain some remarkable clinical properties that they had discovered regarding procaine.

Procaine was discovered in 1905 by Einhorn. It, (like cocaine), was used mainly as a local anesthetic, but was also used by some for local infiltration of “neuralgic” and “rheumatic” conditions with some success. In 1906, Vishnevski reported that local infiltration could reduce inflammation. Russian, German, French, and British physicians experimented with injections into nerves and autonomic ganglia during the first decades of the 1900s, but only in the 1920s was it discovered that procaine could have effects extending far beyond the sight of injection.⁹

Through a series of serendipitous events, two dentist-physician brothers, Ferdinand and Walter Huneke, discovered that intravenous procaine could cure migraine. They later discovered that intracutaneous injections “segmental therapy” into “Head’s Zones” could treat the visceral conditions to which they corresponded. In 1940, Ferdinand Huneke observed

the first “lightning reaction”, a sudden, dramatic extrasegmental response to a local procaine injection. (These may occur with injection of an “interference field”, or focal area of autonomic nervous system dysfunction. Common sights of interference fields are scars, autonomic ganglia, the gingiva of a diseased tooth, or the Head Zone of a visceral organ. Interference fields are not usually symptomatic locally but measurable changes in electrophysiological properties, (e.g. skin conductivity resistance) are always present.)

The Huneke brothers and others developed these discoveries into a whole system of medicine, which they called “neural therapy”. Its theory centers on the physiology of the autonomic nervous system; its practice is identification of focal areas of electrophysiological disturbance; and its treatment is injections of procaine.

Interference Fields

Success in treatment by neural therapy depends on accurate identification of significant interference fields. Interference fields are common, but not all are important. Skill is required in not only finding them but also in finding the “key lesions”. Treating less important interference fields may give temporary or partial results, but cures depend on finding the important ones. This is one of the many similarities of neural therapy and osteopathy.

There are two main methods of detecting interference fields:

- (a) by history
- (b) by autonomic response testing

The most important factor in finding an interference field by history is the relationship between the onset of symptoms and an antecedent event (in the weeks or months before). Typical antecedent events are a surgical op-

eration, a dental procedure or an important organ infection. If these events are accompanied by excessive sympathetic tone (locally or systemically), healing may be impaired¹⁰ and/or an interference field may develop. For example, a mastectomy, or an elective operation during a period of emotional distress is more likely to result in an interference field in the scar than an elective operation with less emotional associations.

The location of an interference field in relation to the symptoms is often not important. It may be near the area of symptomatology or it may be remote. An appendectomy scar may cause chronic headaches; a wisdom tooth scar may cause backache. Recurring pneumonia may be due to an interference field in a lung; unexplained feet pain may be due to hemorrhoids.

Autonomic response testing¹¹ is a relatively new technique of detecting interference fields developed by Dietrich Klinghardt MD, PhD and Louisa Williams DC. It was their observation that muscle strength testing used in applied kinesiology could be used to assess autonomic nervous system function and to detect interference fields.

In its simplest form, a suspected interference field is touched by the operator’s hand and evidence of an autonomic nervous system response is observed in the patient. The most commonly utilized response is change in strength of an indicator muscle (typically a shoulder flexor muscle with the patient supine). Other responses that may be used include changes in arm or leg length, in primary respiratory impulse rate, in vascular pulse quality, in pupillary size, etc.

Treatment of interference fields

Treatment is straightforward. A small amount of dilute procaine is injected into the interference field using the finest needle possible. If the

interference field is a somatic dysfunction, injection into the skin over the affected area will suffice. If the interference field is important, there will be an immediate autonomic response (as explained in the previous column). Physicians practiced in cranial osteopathy will detect an immediate “still point” followed by deepened and more relaxed primary respiratory motion. The patient will often feel complete or partial relief immediately (a lightning reaction), or at some time within the first 24 hours. As with manipulative treatment of somatic dysfunction, there will occasionally be adverse reactions.

Response to treatment may occasionally be permanent with just one injection, but more commonly relief lasts for days or a few weeks. With recurrence, the injection is repeated and a longer response may be expected.

The interval between injections increases with time until eventually a cure is obtained.

The above is a best-case scenario. As with OMT, there are many factors that will limit or block response to treatment. These include other more important interference fields, major untreated somatic dysfunction, poor nutrition, toxic processes, emotional blockages, etc. Neural therapy (like OMT) works best in the hands of a skilled physician who takes into account the whole physiology of the patient.

Osteopathy and neural therapy compared

Osteopathy as described by A.T. Still is clearly a medical philosophy. It is a way of seeing that guides the entire approach of the physician to his patient and his medical problems. To twenty-first century eyes the scientific knowledge that Stills had at his disposal was limited, but his philosophy has nevertheless stood the test of time and is as applicable now as ever.

Still had great faith in the body's

own self-regulatory mechanisms and saw their proper functioning as the only path to good health. He did not use the terms homeostasis, feedback loops, and cybernetics, but he would probably have applauded their invention.

He had a passion for anatomy and physiology and felt that the intelligent application of this knowledge was the physician's task. He recognized that the scientific knowledge at his disposal was limited and he often resorted to metaphor. In referring to anatomy he spoke of it as the “alpha and omega, the beginning and the end, of all forms and the laws that give forms, by selection and the association of the elements, kinds, and quantities, to the human body.” One might wonder what he would have thought of the human genome project?

Neural therapy as taught by the Huneke brothers, was not articulated as a medical philosophy. Nevertheless the philosophy is there and in many ways resembles that of osteopathy. In reading the neural therapy literature one cannot fail to notice the preoccupation with anatomy and physiology, and especially electrophysiology. “Syndromes” are spoken of with scorn, and the failure of allopathic medicine to diagnose and deal with ultimate causes is clearly recognized.

The Huneke brothers were first and foremost clinicians. They had keen powers of observation and rediscovered many things that had previously been reported in the literature but forgotten for lack of recognition of their significance. However it was their ability to interpret physical findings in terms of regulatory physiology that enabled them to build the theory of neural therapy.

The Huneke brothers, like Still, faced considerable opposition from the medical establishment for their views. They saw through the financial corruption inherent in symptom-and-drug based medicine and strove

to find a better way. Ferdinand, the older brother was particularly passionate and his outspoken opinions made him many enemies.

Unlike Still, they did not attempt to build a “school” of neural therapy or a separate profession. Their goal was reform of medicine, and although they received little recognition during their lifetimes, they influenced German medicine to the extent that neural therapy is now commonly practiced throughout much of Germany today.

The Huneke brothers and their followers paid little attention to body mechanics. They apparently knew nothing about osteopathy, but occasionally mentioned “chirotherapy”. They saw chirotherapy in a class with physiotherapy, acupuncture, and other physical modalities that “all made use of the reflex pathways of the neurovegetative system by setting up a therapeutic stimulus in the nervous system whose response to this stimulus then releases the healing reaction. Seen in this light, all these therapies can also be considered to be ‘neural therapy’ in the wider sense.”¹²

The “healing reaction” as seen by the Hunekes was a normalization of the total physiology of the extracellular space. This included the electrical properties, the circulation, the chemistry, the respiration, and even the morphology of the cells inhabiting this space. Because autonomic nerve endings in this space float free, the extracellular space has been considered to be “one big synapse”.

The Viennese school of physiologists led by Pischinger called this space the “matrix” and made it their field of study. Their exploration of this area is summarized in a monograph¹³ that makes fascinating reading for any osteopathically inclined physician. Still's prophecy could hardly have been more accurate: “I believe that more rich golden

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thoughts will appear to the mind's eye as the study of the fascia is pursued than of any other division of the body."¹⁴

"Healing"

The word "healing" can have many meanings, but when used in the context of the subtle, non-specific therapeutic interaction between physician and patient, similar phenomena occur in both osteopathy and neural therapy. It would probably be fair to say that physicians practicing OMT enjoy the intimate contact it allows with their patients. Intimacy permits enhanced communication at many different levels, not least that of a hard-to-describe "energy" which seems to flow from the hands. Patients often report a lightness, mild euphoria and relief from pain as a result of this process. Clinical experience indicates that the physician's agape attitude towards the patient and the patient's reciprocal trust in the physician, play a large part.

Recent physiological experiments involving intentionality and heart, respiratory and brain wave synchronicity (entrainment)^{15,16} seem to support at least the possibility that these speculations may be true. Heart rate variability technology¹⁷ is providing an objective tool to show that the autonomic nervous system is the main receptor and processor of this information. This would explain the similar patient responses in OMT and neural therapy.

Neural therapy does not encourage the same physical contact between physician and patient as does OMT, but it does seem to attract physicians with similar attitudes to their patients. They recognize the limitations of allopathic medicine and are willing to step out and search for new solutions to their patients' illnesses. This takes some courage, and also demonstrates an above-average concern for their patients. Patients are aware of this and

respond accordingly.

The Huneke brothers' lightning reaction was singled out by their critics as being a mere placebo phenomenon. To a certain extent the critics may have been right, but not in the way that they thought they were. The lightning reaction is a true physiological event as evidenced by Pischinger's iodometry¹⁸ and other chemical and hematological measurements. But it is likely that the Huneke's strong personalities, their intentionality, and the autonomic nervous system's response are all part of what occurs. What the patient experiences is very close to that which occurs when a major chronic somatic dysfunction is treated by OMT. In both cases the autonomic nervous system is profoundly affected with the physicians' intention likely playing a large part in the outcome.

Summary

Osteopathy as a philosophy centers around the concept of the body's own ability to heal itself. AT Still's original model was a mechanical one, which saw obstruction of flow of body fluids (especially blood) as the main impediment to good health. OMT has been a logical solution to mechanical problems and has been the mainstay of osteopathic treatment ever since.

At about middle of the twentieth century, new discoveries from neurophysiology revolutionized the understanding of the osteopathic lesion, but had little effect on therapeutics. Research showed that procaine injections could affect the autonomic nervous system in similar ways to OMT. These discoveries from the research field were applied only minimally to osteopathic therapeutics.

At about the same time, German physicians were investigating the therapeutic possibilities of procaine on the autonomic nervous system. They had discovered that foci of au-

tonomic nervous system instability (interference fields) could exist in many areas of the body and were amenable to treatment by procaine. Interference fields have similar if not identical properties to those of somatic dysfunction. Evidence is presented here that a somatic dysfunction is in fact an interference field.

Although not articulated as such, the medical philosophy underlying neural therapy bears strong resemblances to osteopathy. Neural therapy could be said to be another therapeutic tool in the practice of osteopathic medicine. "Head's Zones" refer to the areas of the skin whose sensory properties are affected by disturbance of a particular visceral organ. They do not necessarily lie over the organ. For example, the Head Zone of the liver lies over the right lower costal margin, the right upper shoulder, and the right interscapular area.

Lightening reactions are often accompanied by instant relief of chronic pain, light-headedness, and sometimes euphoria. They are similar, if not identical to the response to osteopathic release of an important chronic somatic dysfunction, e.g. a sutural compression.

Unfortunately, for English-only speakers, the original literature pertaining to neural therapy is almost entirely in German and Russian. However, an excellent summary of this material is available in an English translation of the major neural therapy textbook: (See endnote 9). This book is now out of print by the original publisher, but good quality copies may be obtained from a small US publisher, Medicine Biologica (503) 287-6775. Another useful resource is a translation of a monograph on the physiology of the extracellular space by Pischinger A. "Matrix and Matrix Regulation," (See endnote 13)

References

- 1 Korr IM. The emerging concept of the osteopathic lesion. *JAOA*. 1948;127-138.

- 2 Weiss S, Davis D. Significance of afferent impulses from skin in mechanism of visceral pain; skin infiltration as useful therapeutic measure. *Am.J.M. Sc.* Oct. 1928:176:5517-536.
- 3 Wolff HG, Hardy JD: On nature of pain. *Physiol. Rev.* April 1947:27:167-199,
- 4 Wolff HG, Wolff S. *Pain*. Charles C. Thomas. Springfield, IL. 1948.
- 5 Travell J, Rinzler SH. Relief of cardiac pain by local block of somatic trigger areas. *Pro. So. Exper. Bioi. and Med.* Nov. 1946:63:480-482.
- 6 Rinzler SH, Travell F. Therapy directed at somatic component of cardiac pain. *Am. Heart J.* March 1948:35:248-251.
- 7 Lindgren I. Cutaneous precordial anesthesia in angina pectoris and coronary occlusion: an experimental study. *Cardiologia* 1946-47:11:207-213.
- 8 Travell J, Bigelow NH: Role of somatic trigger areas in patterns of hysteria, *Psychosom. Med.* Nov-Dec. 1947:9:353-363.
- 9 Dosch P. 1984. Manual of neural therapy according to Huneke. p.31. 1st English, 11th German edition. Karl F Haug Publishers, Heidelberg.
- 10 Cruickshank AH, Harris R. Accelerated wound healing in rabbits' ears after cervical sympathectomy. *J. Path. Bact.* 1957:73:177-181.
- 11 Klinghardt DH. Neural Therapy Course A: The Intensive (1993) -workbook for neural therapy workshop, American Academy of Neural Therapy, 410 East Denny Way, Suite 18, Seattle, WA, 98122, (206) 749-9967.
- 12 Dosch P *ibid* p.31
- 13 Pischinger A. Matrix and Matrix Regulation, Haug International, 1991.
- 14 Still AT, (1902) *The philosophy and mechanical principles of osteopathy*. Hudson-Kimberly Publishing Co., Kansas City
- 15 McCraty R, Atkinson M, Tiller WA: The role of physiological coherence in the detection and measurement of cardiac energy exchange between people. 1999 Proceedings of the 10th International Montreux Congress on Stress, Montreux, Switzerland.
- 16 McCraty R, Atkinson M, Tomasino D, Tiller WA: The electricity of touch: detection and measurement of cardiac energy exchange between people. In: Pribram KH ed.: Brain and values: Is a biological science of values possible? Mahwah, NJ: Lawrence Erlbaum Associates, publishers, 1998:359-379.
- 17 McCraty R, Tiller WA, Atkinson M: Cardiac coherence: a new non-invasive measure of autonomic system order. *Alternative Therapies in Health and Medicine*. 1996:29:1052-65.
- 18 Pischinger A *ibid*. □

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(increased lymphatic congestion)

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4. Lower Extremity

HOURL 6

Treatment - Third Trimester

1. Head/Neck – HVLA/ FPR/ ME/ MFR/CS
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Osteopathic Regulation of Physiology

by Douglas G. Richards, PhD, David L. McMillin, MA, Eric A. Mein, MD, and Carl D. Nelson, DC;
Meridian Institute, Virginia Beach, VA

Abstract

This study explored the effects on physiology of “holding the vasomotor center,” a historical technique of inhibitory pressure in the cervical area, intended to affect sympathetic nervous system control of circulation. Circulation, skin temperature, heart rate and breathing rate were measured in 18 participants, during holding the vasomotor in comparison with a “sham” manipulation -a gentle touching of the tops of the shoulders. There was substantial individual variability, but averaging of the responses showed increased circulation to the fingers, accompanied by increased finger temperature and a briefly reduced heart rate followed by an increased heart rate, in response to holding the vasomotor center. Touching the shoulders did not result in any circulatory or temperature changes, but did cause a briefly reduced heart rate identical to that from holding the vasomotor center.

Manual therapy encompasses both structural corrections and regulation of physiology, but the regulatory aspects have received less attention than the structural aspects.¹ Nevertheless, regulation of physiology played a significant role in historical osteopathy, and has received some support from modern research. Our goal in this pilot study was to test a claim from the

early osteopathic literature, as a step toward discriminating physiologically effective manipulations from those manipulations with the potential to be “sham” controls in experiments.

Historical osteopathy often focused on regulation of physiology. For example, Barber² states: “We all agree upon the one great point, that man is a machine, and that nerve-centers have been discovered upon which a pressure of the hand will cause the heart to slow or quicken its action, from which we can regulate the action of the stomach, bowels, liver, pancreas, kidneys, and the diaphragm” (p.28). He says, “With a thorough knowledge of the various nerve-centers, and the innervation of the different tissues and organs, the osteopath is able to coordinate the nerve-force of the body. He can increase the nerve-current to almost any part of the being, and can quiet an excessive one as well” (p.23).

Modern research offers some support for the effects of manipulation on physiology, reviewed in Mein et.al.¹ For example, animal work by Sato and colleagues³⁻⁵ supports the traditional concepts of stimulation and inhibition. Working with anesthetized animals, they have traced reflexes from various types of mechanical, thermal and chemical stimulation of the skin to visceral effector organs including the heart, stomach, sweat

glands, bladder, and adrenal medulla. Heart rate can be increased in anesthetized cats by stimulation of any one of a variety of skin areas. This reflex is produced mainly by an augmentation of cardiac sympathetic efferent nerve activity. Similarly, in the anesthetized rat, Sato demonstrated inhibition of gastric contractions by stimulating the abdominal skin. Conversely, noxious stimulation of a hind paw sometimes augments gastric motility, mediated by reflex facilitation of gastric vagal efferent nerve activity.

In humans, there is also some evidence for the effects of manipulation on physiology. For example, the thoracic lymphatic pump has been shown to modify immune function^{6,7} and manipulation has reduced hypertension.^{8,9} Purdy et al¹⁰ demonstrated that gentle, soft tissue manipulation in the suboccipital region can result in significant changes in blood flow in the fingers, mediated by the sympathetic nervous system. In addition, Purdy et al found that even a gentle touch in the same area, without manipulation, had a measurable effect on finger blood flow. Their result is particularly interesting because it demonstrates changes in the autonomic periphery during manipulation of a dermatome unrelated to the area being measured.

One important issue that has arisen

from studies on the efficacy of manual therapy is that of the placebo effect and the nature of an appropriate “sham” treatment. In a recent study of the effect of chiropractic on childhood asthma, the sham treatment included soft tissue work similar to traditional osteopathic manipulation.¹¹ The placebo condition included, among other manipulations, “soft-tissue massage and gentle palpation” to the spine, paraspinal muscles, and shoulders; “turning the subject’s head from one side to the other;” with the subject in a supine position “with the head rotated slightly to each side, . . . an impulse applied to the external occipital protuberance;” and with the subject in the prone position, “a similar impulse was applied bilaterally to the scapulae.”

The study yielded evidence for the efficacy of both treatments, but the authors concluded that this result demonstrated the placebo effect. We have disagreed, pointing out the importance of considering the diversity of manual techniques when studying manual therapy.¹²⁻¹⁵ In particular, soft tissue techniques that do not involve high velocity, low amplitude (HVLA) thrusts on the spine may have significant physiological effects, as shown in the Purdy et al¹⁰ study.

We had a particular interest in techniques affecting the sympathetic/parasympathetic balance and influencing circulation, since this is an important consideration in therapy for asthma. Rather than looking at a complex, full treatment, we chose to study a simple maneuver from traditional osteopathy, in comparison with another simple maneuver not expected to have a direct effect on the sympathetic nervous system.

We chose a manipulation intended to inhibit the superior cervical ganglion; a primary vasomotor center discussed in various early osteopathic manuals.^{2,16-18} The vasomotor system controls the circulation of the body. Inhibition, defined as holding a steady

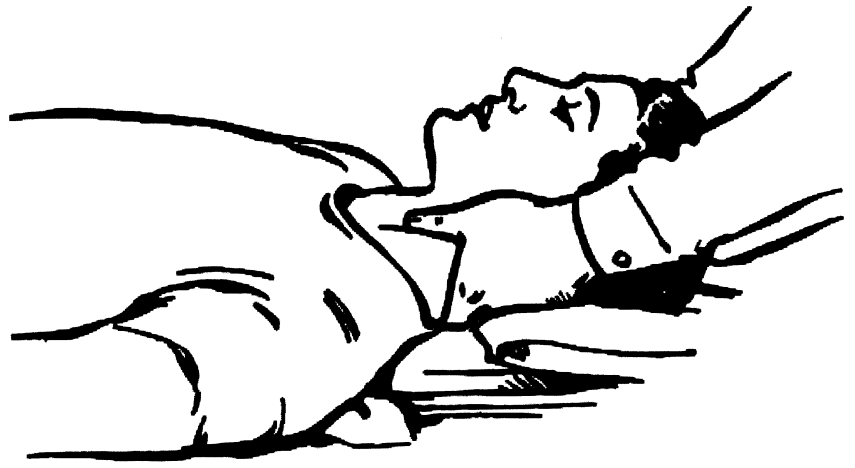


Figure 1. Illustration of historical osteopathic method of “holding the vasomotor” used in this study, from 1910 Text-Book of Osteopathy.¹⁹

pressure on the cervical vasomotor center, was said to dilate the blood vessels by reducing sympathetic nervous system activity, increasing circulation to such areas as the hands and feet. Barber² used the expression “holding the vasomotor” when referring to this technique. His description of the move was as follows: “Place the hands upon the sides of the neck, the fingers almost meeting over the spine of the upper cervicals; tip the head backward, pressing hard upon the vasomotor center four or five minutes . . .” (p.260). Figure 1, from the *1910 Text-Book of Osteopathy*¹⁹ illustrates the maneuver as we used it in the current study. The move was said to be particularly useful in treating headache and reducing fevers associated with infectious disease.

A. T. Still realized the therapeutic potential of steady pressure on the cervical ganglion when he used an inhibitive technique (lying with his neck in a sling) to relieve his own headaches.²⁰ Later, when writing *Philosophy of Osteopathy* in 1899,²¹ he included an entire chapter by William Smith on “The Superior Cervical Ganglion.” Smith discussed the effects of inhibitory pressure upon the upper four cervical nerves: “the capillaries over the entire surface of the body flushed, this being accompanied

by a fall in pulse rate and a marked diminution of the temperature [note that he does not specify which temperature—he probably means the internal body temperature]” (p.267). In another passage Smith discussed inhibition of the superior cervical ganglion, and noted that it should produce “relaxation of the vascular walls . . . the skin will become flushed and moist . . . the vagus is now allowed full sway, and we must find slowing of the heartbeat” (p.266).

We had two questions. The first was whether the effects of such a maneuver on physiology could be measured. The second was whether the maneuver of holding the vasomotor had specific effects that were different from those of a “sham” treatment—simply lightly touching the tops of both shoulders simultaneously, for the same duration as the vasomotor inhibition. Note that, like the sham treatment in the Balon et al¹¹ study on asthma, these manipulations involved the soft tissue of the neck and shoulders.

Methods

Eighteen volunteers (6 male, 12 female, mean age 51, SD 11.1, range 28-74) participated in the project. There were no specific selection cri-

teria; all participants were questioned concerning any conditions that might affect circulation. Although several reported poor circulation to the extremities, these participants were included since a possible change in circulation was relevant to the hypothesis. All participants provided informed consent prior to their participation; the consent form included a statement that the experiment had no therapeutic purpose, but was solely to collect physiological data. Each person took part in one or two sessions, as described below.

Physiological measurement was performed using a Biopak Systems MP100WSW data acquisition system. Measures included heart rate (calculated from electrocardiograph beat-to-beat interval), depth of breathing (from temperature measurement of inhalation and exhalation through the nose), circulation to the finger (right thumb) and toe (right big toe) from a photoplethysmograph, and temperature of left thumb. Room temperature was maintained at between 68 and 73 degrees F (20.0 and 22.8 degrees C). This was intended to provide a slight thermal stress, cooling the extremities.

The subjects were instructed to lie on a table for 40 minutes, while we measured the physiological variables. They were told to simply relax. After a 10-minute baseline, a therapist would either hold the vasomotor center, or lightly touch the tops of the shoulders, for 5 minutes. The order was randomly chosen to avoid effects simply due to how long the person had been lying on the table. Then, after another 10-minute period of relaxation, the other manipulation would be given for 5 minutes, and the session would end with a final 10-minute period of relaxation.

Results

The most striking result initially was the presence of a great deal of

individual variability. For example, the baseline finger temperature ranged from 74 degrees F to 96.5 degrees F. But by averaging over many sessions (23 total sessions in this report), we were able to clearly see the typical effects of these maneuvers on physiology. Over time, with no treatment at all, circulation and skin temperature tend to drop in a cool room, and heart rate decreases as the body relaxes. We were looking for depar-

tures from this general trend.

Figure 2 shows the average effect on finger circulation. The standard deviation of the blood volume pulse from the photoplethysmograph was used as a measure of circulation. The graph shows 5 minutes before the treatment, the 5-minute treatment, and 5 minutes after the treatment. Holding the vasomotor is the solid line; the shoulder touch is the dotted line. The graph shows that, on the

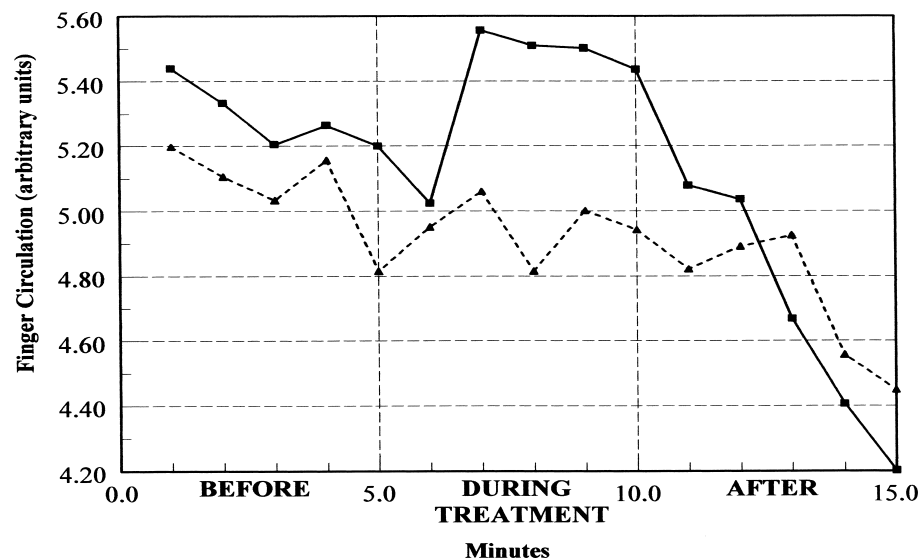


Figure 2. Effect of "holding the vasomotor" on finger circulation (solid line), compared with light shoulder touch (dotted line).

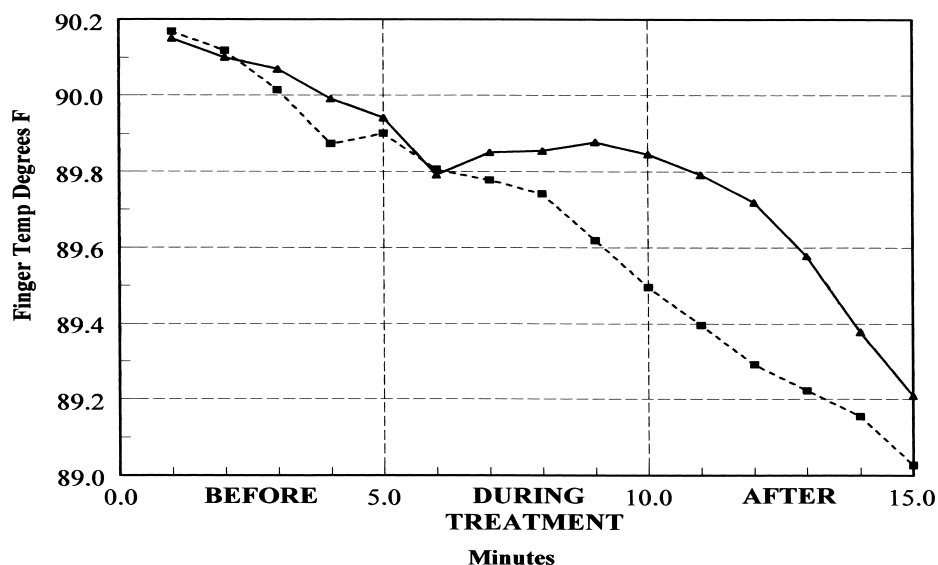


Figure 3. Effect of "holding the vasomotor" on finger temperature (solid line), compared with light shoulder touch (dotted line).

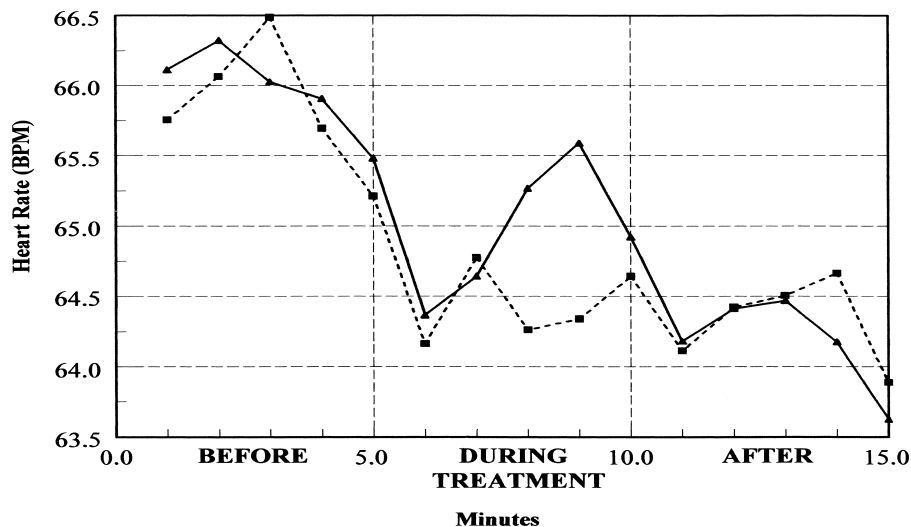


Figure 4. Effect of “holding the vasomotor” on heart rate (solid line), compared with light shoulder touch (dotted line).

average, about a minute into the treatment, circulation goes up with the active treatment, while it stays the same with the sham treatment.

Figure 3 shows the average effect on finger temperature. The means have been adjusted to show identical temperature at the beginning of the measurement period. Note that the effect on temperature is smoother and longer lasting than the one on circulation. It takes a while for the flow of blood to the surface to actually warm the skin, and then the skin holds heat longer after the blood flow has decreased.

Figure 4 shows the effect on heart rate. This was especially interesting to us, since in the first minute of both maneuvers, heart rate decreases. A decrease of heart rate is consistent with the historical osteopathic literature.²¹ However, here it seems to be a general response to being touched. Then heart rate increases for the “holding the vasomotor” maneuver, while for the shoulder touch there is no change.

Discussion

The early osteopaths made strong claims about the effects of manipulation on physiology. This pilot study provides evidence that, with an aver-

age of many subjects, the circulatory effects of holding the vasomotor center can be demonstrated. However, the variability both within and between subjects was so great that caution must be exercised in accepting any generalization about effects. It is also clear that treatments involving the neck and shoulder, including ones intended as sham treatments, have the potential for physiological effects and should not be thought of as placebo controls.

Variability -both baseline variability unrelated to the manipulation, and variability in response to the manipulation – is the greatest challenge in this research, making statistical analysis difficult. Driscoll and DiCicco,²² who are also exploring the effects of manipulation on physiology (heart rate variability), faced a similar problem of variability that swamped the desired effect. They were able to reduce the variability by driving heart rate with timed breathing, but noted that this may override any effects from manipulation. We are exploring ways to reduce variability by selecting subjects based on preliminary measurements of physiology.

Another significant issue raised by the results concerns the time frame of the measurements. The baseline

must be sufficiently long to establish a trend or to allow the variability to stabilize. The treatment period must be sufficiently long for an effect to occur, but not so long that the response habituates or reverses. For example, in a preliminary experiment we found a reversal effect, where inhibition would appear about halfway into a 10-minute period of stimulation. The measurement period must be sufficient to allow for any lag between the treatment and the response, and for any persistence of the effect after the end of the treatment. For example, a study by Harris and Wagnon²³ looked at finger temperature 10 seconds after an HVLA chiropractic adjustment, finding evidence of physiological effects. Our data suggest that even with a rapid increase in peripheral circulation, there is a lag of 30 seconds or more for temperature to rise, making their results difficult to interpret. Finally, persistence of effects can complicate studies in which a series of manipulations are given.

The heart rate result shows how hard it may be to define a “sham” treatment for scientific study. Our sham maneuver was a light touch of the tops of both shoulders, which is not a location of significance in the osteopathic literature. The shoulder touch response is likely to be a non-specific reaction to being touched, but there remains the possibility of specific effects on the autonomic nervous system from points distant from the spine. As noted previously, Purdy et al¹⁰ found that a light touch on the occipital area had an effect on digital blood flow. Several participants in the current project pointed out that the points of shoulder contact might be relevant in acupressure. Alternatively, some of the Chapman’s points used in osteopathic manipulative therapy bear little obvious relation to the target organ. For example, the anterior points for the eye problems of retini-

tis and conjunctivitis are located on the front of the humerus,²⁴ (p.18). Even light stroking of the skin has claims of major effects on lymphatic physiology.²⁵

We concur with Purdy et al¹⁰ that manipulation of the cervical area can have useful physiological effects, and could be applicable to the treatment of entities such as migraine or other hyperautonomic states. In addition, it is clear that even simple touching is not an inert placebo, and that the effects of touching itself bear further investigation.

References

1. Mein EA, Richards DG, McMillin DL, McPartland JM, Nelson CD. Physiologic regulation through manual therapy. *Physiological Medicine and Rehabilitation: State of the Art Reviews*. 2000;14:1:27-42.
2. Barber ED. *Osteopathy Complete*. Kansas City, MO. Press of Hudson-Kimberly Publishing Co. 1898.
3. Sato A. Somatovisceral reflexes. *J Manipulative Physiol Ther* 1995;18:597-602.
4. Sato A. Reflex modulation of visceral functions by somatic afferent activity. In: Patterson, MM, Howell, JN, editors. *The Central Connection: Somatovisceral/Viscerosomatic Interaction*. 1989 International Symposium. Athens, Ohio: American Academy of Osteopathy. 1992:53-76.
5. Sato A, Sato Y, Suzuki A, Uchida S. Neural mechanisms of the reflex inhibition and excitation of gastric motility elicited by acupuncture-like stimulation in anesthetized rats. *Neurosci Res*. 1993;18:53-62.
6. Measel JW, Jr. The effect of the lymphatic pump on the immune response. I. Preliminary studies on the antibody response to pneumococcal polysaccharide assayed by bacterial agglutination and passive hemagglutination. *JAOA*. 1982;82:1:28-31.
7. Jackson KM, Steele TF, Dugan EP, Kukulka G, Blue W, Roberts A. Effect of lymphatic and splenic pump techniques on the antibody response to hepatitis B vaccine: A pilot study. *JAOA*. 1998;98:155-160.
8. Mannino JR. The application of neurologic reflexes to the treatment of hypertension. *JAOA*. 1979;79:225-231.
9. Morgan JP, Dickey JL, Hunt HH, Hudgins PM. A controlled trial of spinal manipulation in the management of hypertension. *JAOA*. 1985;85:308-312.
10. Purdy WR, Frank JJ, Oliver B. Suboccipital dermatomyotomic stimulation and digi-

- tal blood flow. *JAOA*. 1996;96:5:285-9.
11. Halon J, Aker PD, Crowther ER, Danielson C, Cox PG, O'Shaughnessy D, Walker C, Goldsmith CH, Duku E, Sears MR. A comparison of active and simulated chiropractic manipulation as adjunctive treatment for childhood asthma. *N Engl J Med*. 1998;339:1013-1020.
12. Richards DG, Mein EA, Nelson CD. Chiropractic manipulation for childhood asthma [Letter]. *N Engl J Med*. 1999;340:391-392.
13. Nelson CD, McMillin DL, Richards DG, Mein EA, Redwood D. Manual healing diversity and other challenges to chiropractic integration. *J Manipulative Physiol Ther*. 2000;23:3:202-207.
14. Mein EA, Greenman PE, McMillin, DL, Richards DG, Nelson, CD. Manual medicine diversity: research pitfalls and the emerging medical paradigm. *JAOA*, in press, 2001.
15. McMillin DL, Richards DG, Mein EA, Nelson CD. [Letter]. *The AAO Journal*. 2000;10:11-12.
16. Hazzard C. *Principles of Osteopathy* (Third Edition). Kirksville, MO, Charles Hazzard, 1899.
17. Feidler FJ. *The Household Osteopath*. New York. Broadway Publishing Company. 1906.
18. Davis AP. *Neuropathy*. The New Science of Drugless Healing Amply Illustrated and Explained. Cincinnati, OH. F. L. Rowe. 1909.
19. *Text-Book of Osteopathy*. Chicago, IL, American College of Mechano-Therapy, 1910.
20. Still AT: *Autobiography of Andrew Taylor Still*. Kirksville, MO. A. T. Still. 1897.
21. Smith W. Chapter 20 – The Superior Cervical Ganglion. In Still AT, ed. *Philosophy of Osteopathy*. Kirksville, MO, A. T. Still, 1899.
22. Driscoll D, DiCicco G. The effects of metronome breathing on the variability of autonomic activity measurements. *J Manipulative Physiol Ther*. 2000;23:610-614.
23. Harris W, Wagnon RJ. The effects of chiropractic adjustments on distal skin temperature. *J Manipulative Physiol Ther*. 1987;10:57-60.
24. Kuchera ML, Kuchera W A. *Osteopathic Considerations in Systemic Dysfunction*. Kirksville, MO. KCOM Press. 1991.
25. Kurz I: Textbook of Dr. Vodder's Manual Lymph Drainage. Volume 2: *Therapy*. Brussels. Hang International. 1986.

Note: The complete texts of the historical sources on osteopathy are all available on the Meridian Institute web site, www.meridianinstitute.com, in the Early American Manual Therapy section. □

Affiliated organization's CME calendar

October 12-14, 2001

Osteopathy and the Neuroendocrine Immune System
Sutherland Cranial Teaching Foundation
UNECOM, Biddeford, ME
Hours: 18 Category 1A
Contact: Judy Staser
(817) 926-7705

November 10-13, 2001

Biodynamics – Phase IV
James Jealous, DO
Farmington, ME
Hours: 23 Category 1A
Contact: James Jealous, DO
(207) 778-9847

November 17-20, 2001

Biodynamics – Phase VI
James Jealous, DO
Farmington, ME
Hours: 24 Category 1A
Contact: James Jealous, DO
(207) 778-9847

February 21-25, 2002

Midwinter Basic Course
The Cranial Academy
Hours: 40 Category 1A
Contact: The Cranial Academy
(317) 594-0411

April 5-6, 2002

Introductory Theory and Treatment with the Application of Percussion
Goshen, IN
Hours: 21 Category 1A
Contact: Max P. Hostetler, DO
(219) 534-4297

April 20-21, 2002

7th Annual Family Practice Review & Reunion
Grandview Hospital
Mary L. Theodoras Auditorium
Dayton, OH
Contact: Jennifer A. Horvath
DaytonAcademy@aol.com

Ohio University - College of Osteopathic Medicine Athens, Ohio

The Ohio University College of Osteopathic Medicine is seeking two physician (D.O.) for full-time, tenure track, clinical faculty position in osteopathic manipulative medicine. The successful candidate will have special interest and qualifications in the practice and teaching of osteopathic principles and manipulative medicine. The position is in the Department of Family Medicine, Section of Osteopathic Manipulative Medicine.

Qualifications: Graduate of an AOA-approved osteopathic college, satisfactory completion of an AOA approved internship, Board eligible or Board certified in an AOA-approved residency program. Additional certification by the American Osteopathic Board of Special Proficiency in Osteopathic Manipulative Medicine is desirable. Ohio licensure or credentials allowing same. DEA licensure.

Responsibilities:

1. Teach courses assigned to the Department of Family Medicine with priority given to the teaching of osteopathic manipulative medicine.
2. Participate in the ongoing programs and program development of the Section of Osteopathic Manipulative Medicine including pre- and postdoctoral training, research, and other scholarly activities, as appropriate.
3. Maintain, demonstrate, and teach the clinical application of osteopathic principles and manipulative medicine in ambulatory and hospital-based practice.
4. See patients twelve (12) to sixteen (16) hours weekly in the Osteopathic Medical Centers.

Rank and Salary: Practice plan incentive salary plus base University salary at the Assistant/Associate Professor rank commensurate with experience and credentials.

Benefits: Excellent fringe benefits. Research facilities available. Rural environment with cultural advantages of university town.

Information regarding this position may be obtained by calling David C. Eland, D.O. Section of Osteopathic Manipulative Medicine, at either of the following numbers: 740/593-4787 (office), or 740/593-7747 (home).

Application Deadline: Review of candidates will begin immediately upon receipt of applications and continue until suitable candidates are identified. Starting date is September 1, 2001, or whenever suitable candidates are found. Formal letter of interest in position may be sent to:

David N. Stroh, D.O.
Chair, Department of Family Medicine Grosvenor Hall
Ohio University College of Osteopathic Medicine
Athens, Ohio 45701-2979

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AAO Sets Sail for the Mexican Riviera aboard Royal Caribbean's Vision of the Seas February 3-10, 2002

Hours: 20 Category 1A

**“Facilitated Positional Release” Hands-on Workshop
Eileen DiGiovanna, DO, FAAO, Program Chairperson**

Itinerary

Sunday, February 3, 2002 (San Diego)

9-10:00 am History and Philosophy of Osteopathy
10-11:00 am Osteopathic Manipulation
11-12:00 nn Facilitated Positional Release
12-1:00 pm Physiologic Basis

Monday, February 4, 2002 (at sea)

8-9:00 am Cervical Diagnosis (lab)
9-10:00 am Cervical FPR (lab)
10-12:00 am Thoracic Diagnosis (lab)
12-2:00 pm Lunch
2-3:00 pm Thoracic FPR (lab)
2-4:00 pm Thoracic Outlet Syndrome

Tuesday, February 5, 2002 (Cabo San Lucas)

Wednesday, February 6, 2002 (Mazatlan)

Thursday, February 7, 2002 (Puerto Vallarta)

Friday, February 8, 2002 (at sea)

8-9:00 am Rib Diagnosis (lab)
9-10:00 am Rib FPR (lab)
10-12:00 pm Low Back Pain
12-2:00 pm Lunch
2-4:00 pm Lumbar, Sacrum, pelvis FPR (lab)

Saturday, February 9, 2002 (at sea)

8-9:00 am Upper Extremity Dysfunctions
9-10:00 am Upper Extremity FPR (lab)
10-11:00 am Lower Extremity Dysfunctions
11-12:00 pm Lower Extremity FPR (lab)



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