

THE AAO

JOURNAL



A Publication of the American Academy of Osteopathy

VOLUME 7 NUMBER 2 SUMMER 1997

Fluid hydraulics
in human physiology

...see page 11

Myofascial Release

July 25-27, 1997

University of New England / College of Osteopathic Medicine
Biddeford, Maine

Judith O'Connell, DO, FAAO, Program Chairperson and Presenter

Hours: 20-Category 1-A

Program

Friday, July 25, 1997

AM

- 8:00 Introduction: Our roots in the fascia.
9:00 Fascia, specialized connective tissue, properties and function.
10:00 Enlightening Properties, piezoelectric considerations
11:00 Anatomy 1: relationships to muscle, dura, lymph, nerves, blood.
11:45 Lunch

PM

- 1:00 LAB: exercises in postural relationships.
2:00 Anatomy 2: Horizontal diaphragms.
3:00 LAB: diaphragms.
5:00 Adjourn

Saturday, July 26, 1997

AM

- 8:00 Anatomy 3: longitudinal cables.
9:00 LAB: the holographic system, cables and diaphragms.

PM

- 12:00 Lunch.
1:00 Anatomy 4: dura and the reciprocal tension membrane.
2:00 LAB: putting it all together
5:00 Adjourn

Sunday, July 27, 1997

AM

- 8:00 Trauma: fascia first! Following patterns through the fascia.
9:00 LAB: trauma patterns

PM

- 12:00 Adjourn

Appropriate Dress: Loose fitting sports attire.

Advance Registration

**Deadline:
June 25, 1997**

SEMINAR FEE:

Prior to June 25, 1997:

AAO Member	\$525
Intern/Resident	\$525
AAO Non-Member	\$625

After June 25, 1997:

AAO Member	\$625
Intern/Resident	\$625
AAO Non-Member	\$725

Who May Attend

Fully licensed physicians, residents and interns. *Students will not be able to attend this course.*

Refund Policy

The American Academy of Osteopathy reserves the right to cancel this educational program if insufficient physicians pre-register. Sufficient registrations must be received 30 days prior to the opening of the course. If you are considering registering for this course less than 30 days prior to the opening, contact the Academy office before making travel plans. In the event of course cancellation by the Academy due to lack of registration, all money will be refunded.

Cancellation from participants received in writing for other reasons up to 30 days prior to the course opening are subject to withholding of a 15 percent administrative fee. All other cancellations will receive no refund but may transfer 80 percent of the tuition to another AAO educational program held within the next 12 months.

Conference Registration

**Myofascial Release Course
July 25-27, 1997
UNECOM
Biddeford, ME**

Name for Badge (please print clearly)

Street Address

City State Zip

AOA Number

College and Year Graduated

We Accept



OR



(circle one)

Cardholder's Name

Card Number

Card Expiration Date

Signature

Make Hotel Reservations
by calling the hotel directly
by May 24, 1997:

\$135.00 Room Rate. Five minutes from UNECOM. Transportation on your own.

Inn at Goose Rocks

(207) 967-5425

Please ask for block of rooms listed under: OMM Department; UNECOM
It is important to make your room reservations early.

American Academy of Osteopathy

3500 DePauw Boulevard
Suite 1080
Indianapolis, IN 46268-1136
(317) 879-1881
FAX (317) 879-0563

1997-1998

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Opinions expressed in *The AAO Journal* are those of authors or speakers and do not necessarily reflect viewpoints of the editors or official policy of the American Academy of Osteopathy or the institutions with which the authors are affiliated, unless specified.

THE AAO JOURNAL

A Publication of the American Academy of Osteopathy

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

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Advertising Rates for the AAO Journal

An Official Publication

of The American Academy of Osteopathy
The AOA and AOA affiliate organizations and members of the Academy are entitled to a 20% discount on advertising in this Journal.

Call: The American Academy of Osteopathy
(317) 879-1881 for more information.

Subscriptions: \$50.00 per year

Advertising Rates:

	Size of AD:
Full page \$600 placed (1) time	7 1/2 x 9 1/2
\$575 placed (2) times	
\$550 placed (4) times	
1/2 page \$400 placed (1) time	7 1/2 x 4 3/4
\$375 placed (2) times	
\$350 placed (4) times	
1/3 page \$300 placed (1) time	2 1/4 x 4 3/4
\$275 placed (1) times	
\$250 placed (4) times	
1/4 page \$200 placed (1) time	3 1/2 x 4 3/4
\$180 placed (2) times	
\$150 placed (4) times	
Professional Card: \$60	3 1/2 x 2
Classified: \$1.00 per word (not counting a, an, the)	

Instructions for Authors

The American Academy of Osteopathy (AAO) Journal is intended as a forum 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

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 Raymond J. Hruba, DO, FAAO, Editor-in-Chief, MSU-COM, Dept. of OMM, A-439 E. Fee Hall, East Lansing, MI 48824.

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 one copy. Please 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.

Computer Disks

We encourage and welcome computer disks containing the material submitted in hard copy form. Though we prefer Macintosh 3-1/2" disks, MS-DOS formats using either 3-1/2" or 5-1/4" discs are equally acceptable.

Illustrations

1. Be sure that illustrations submitted are clearly labeled.
2. Photos should be submitted as 5" x 7" glossy black and white prints with high contrast. On the back of each, clearly indicate the top of the photo. Use a photocopy to indicate the placement of arrows and other markers on the photos. If color is necessary, submit clearly labeled 35 mm slides with the tops marked on the frames. All illustrations will be returned to the authors of published manuscripts.
3. Include a caption for each figure.

Permissions

Obtain written permission from the publisher and author to use previously published illustrations and submit these letters with the manuscript. You also must obtain written permission from patients to use their photos if there is a possibility that they might be identified. In the case of children, permission must be obtained from a parent or guardian.

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

All accepted articles are subject to copy editing. Authors are responsible for all statements, including changes made by the manuscript editor. No material may be reprinted from *The AAO Journal* without the written permission of the editor and the author(s).

From the Editor

by Raymond J. Hruby, DO, FAAO



In this issue of *The Journal*, along a lot of other good things, we present an article entitled "Osteopathic Research: A Challenge to the Specialist", written by Anita Eisenhart, DO. In this article, Dr. Eisenhart challenges DO specialists to do clinical research demonstrating the effectiveness of osteopathic manipulative treatment (OMT) in their respective specialty areas. She is correct in stating that we often mislead ourselves by thinking that OMT does not apply to certain specialty practices. We need research in these areas to show that this just simply is not true.

As part of her article, Dr. Eisenhart cites a number of studies that were performed over the years in certain areas, such as ophthalmology, surgery and, more recently, emergency medicine. These citations reminded me of something that is near and dear to my heart, and I would like to talk about that here if you will indulge me.

I believe that one of the major problems we have in the profession is that most DOs do not realize how much research has been done on osteopathic medicine over the decades. Professors in our colleges never mention it, so students never hear of it. Each year we graduate another generation of DOs who live their careers thinking that little or no effort has ever been made to scientifically demonstrate our distinctive approach to health care. My interest in osteopathic history has led me to discover that there is a rich

Osteopathic medicine: Show me the research!

body of research evidence that supports the foundation of our osteopathic practice.

To begin with, osteopathic research was being done at the American School of Osteopathy as early as 1898, as far as I can tell from my readings. The A. T. Still Research Institute was established in the early 1900s, and bulletins of research were published by the Institute on a regular basis.

As time goes on, we can see the tremendous research efforts being made by a number of people within the profession. Some of these researchers include Louisa Burns, J. Stedman Denslow, Wilbur V. Cole, Harry M. Wright and Price E. Thomas, to name only a very few. These were DOs who were well known for their research efforts. There were also a number of basic scientists who contributed greatly to this body of literature. One of the most notable ones is Irvin M. Korr, PhD, who was, and still is, a giant in the area of osteopathic research.

Today there are DOs and PhDs alike who continue these research efforts. Amongst the DOs we can include William Johnston, Myron Beal, Anthony Chila, Michael Kuchera, and many, many others. The basic science list would include the likes of Michael Patterson, Frank Willard, Richard Heisey, Richard Halgren, Albert F. Kelso, James M. Norton, and a host of others. To try to name everyone who should be on these lists would take up more space than several issues of the AAO Journal could handle. So where does one find out about all the research that has

gone on, and is currently going on, within our profession? Let me suggest a few sources. The first place one might look is in the bulletins published by the old A. T. Still Research Institute mentioned above, and in the AAO Yearbooks published regularly by the American Academy of Osteopathy. I realize that not everyone may have access to the older publications that are out of print. Nevertheless, if you check with the AAO or some of the osteopathic colleges, you may be able to get some of this information. In addition, the more modern day AAO Yearbooks are in print and many are available through the AAO.

Another wonderful source of research information is a book entitled *Osteopathic Research: Growth and Development*, edited by George W. Northup, DO, FAAO, and published by the American Osteopathic Association. This is a short, easy to read book that surveys osteopathic research from 1898 to 1975.

Finally, I would urge you to look at *Foundations for Osteopathic Medicine*, edited by Robert C. Ward, DO, FAAO, and published by Williams and Wilkins. This book was released in October of 1996, and its chapters contain many references to some of the most recent osteopathic literature.

So when you wonder where the osteopathic research is, let me assure you that there is more research going on than meets the eye. Look around, take advantage of some of the above resources, and rest assured that research in the profession is alive and growing! □

Message from the President

by Ann L. Habenicht, DO, FAAO

1997 AAO inaugural speech



My friends, I would like to thank you for this opportunity you have given me to serve as president of the American Academy of Osteopathy.

I would like to share with you my thoughts for this Academy for now and the future, but first I must tell you where I came from for this had an enormous influence on me.

Last year, Dr. Mike (Michael Kuchera, DO, FAAO) told us that he was a "child of the Academy." He grew up in the osteopathic profession; I was pushed towards it.

As a native of northern Illinois/Chicago area, it was quite logical that I had never heard of osteopathic medicine. While in graduate school, I knew I wanted to become a physician. A fellow grad student told me about CCOM and encouraged me to apply. I will be eternally grateful to Dr. Ruth Emyanitoff for that *direct thrust* that sent me to osteopathy. At CCOM, I realized that there *was* a *complete* physician in the world, who was concerned with health and the well being of the body, mind, and spirit.

It is because of this discovery at CCOM, and of the mentors Robert Kappler, Kenneth Nelson, and Mark Walton, that I have this passion for osteopathy. It is the Academy, through its members and mission, that has nurtured this drive and has placed me in this position today.

My friends, we have a great opportunity to thrust osteopathy into the forefront for the future. We, the Academy, are the conscience of the profession, the "keepers of the flame." We are the constant reminder to our fellow DOs to remain true to their osteopathic roots.

How can we as Academy members change the future? First and foremost, we must be the best osteopathic physicians we can be. As Dr. Mike Kuchera stated recently, "Osteopathy is not synonymous with manipulative medicine. A true osteopathic physician must use osteopathic principles with manipulative medicine."

This then leads us to one of my concerns, educating our future colleagues. Our future lies within our residents, interns and students. Too often we see promising students obtain excellent osteopathic beginnings only to lose their osteopathic teachings as they continue into their clinical training.

We, as Academy members, *must* assist them. I challenge each of you to become a role model and/or mentor for our externs, interns, and residents. In this way, we can "pass on the flame" to our future attending physicians.

Next, we must keep the Academy strong. We are in the process of a deficit reduction. The next two years are financially crucial years for the Academy. We have cut all the fat from our budget to cut our expenses. In order to balance our budget for the future, we must increase our revenues.

I challenge each of you to attract a new physician into Academy membership. With increased membership, the flame glows brighter in our profession.

I also challenge the physicians who are associated with intern/resident training programs to attract at least one new resident/intern member into Academy membership.

We must also encourage non-AAO members to attend our educational programs. Once they experience our quality programs, I am certain they, too, will wish to join us as Academy members.

Lastly, we must work toward unity within the osteopathic profession. We have an excellent start. The past five years have taken our quiet Academy to prominence within the profession. We plan to do more.

Our osteopathic medical economics committee has been essential in assisting the profession in "getting paid for what we do." They are busy working toward documents to interface with managed care. These documents will assist the profession as a whole with managed care initiatives.

Our Louisa Burns Research committee is working at the forefront of research to prove what we have been saying all along, **Osteopathy Works!**

These are the challenges we need to meet in the coming year; mentoring our future colleagues, educating our fellow teachers and clinicians, and unifying our profession under the flag of osteopathy.

It is a pleasure to have this leadership role in this challenging time. With the help of our established strong leadership position, dedicated committees, boards, and staff, we are certain to accomplish these and many other tasks and brighten the flame of osteopathy for all to see.

Thank you for allowing me this opportunity to serve you.

Message from the Executive Director

by Stephen J. Noone, CAE



AAO has web page

<http://www.aao.medguide.net>

The American Academy of Osteopathy has a Web Page in full color on the Internet at the above address which will be on line by the time readers receive this publication. I encourage you to explore the site and forward your comments and suggestions to the AAO office.

Thanks to generous contributions last March from AAO Trustees Mark Cantieri and Judith O'Connell, the Board was able to authorize the development of the web site immediately. The AAO welcomes additional contributions to support ongoing maintenance of the site in the next fiscal year and future enhancements which will better serve the needs of Academy members.

As part of its Long Range Plan and its overall communications goal to expand AAO's visibility, the Academy included an objective to take advantage of emerging technologies, e.g. the Internet. Last fall, Membership Coordinator Deb DiStasio led the AAO staff in identifying those programs and services which could effectively be placed on the Internet for the benefit of Academy members, other health care practitioners and the consumer public.

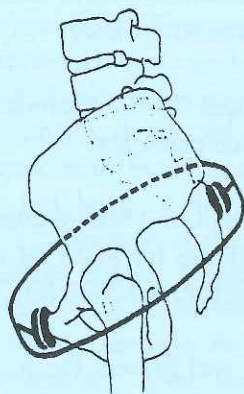
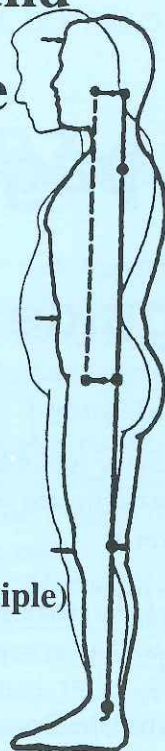
As a result, the Web Page is built around eight central themes with over 25 branching topics. The themes include:

1. *The AAO Story* – a brief outline of programs and services as well as testimony to the organization's accomplishments over the past five years.
2. *Contacts* – a list of AAO officers board and committee members, staff as well as osteopathic medical schools and the procedure for obtaining a list of AAO members by state.
3. *Course Offerings* – The Academy's policy on "who can attend" its educational programs, as well as an event calendar and registration information for each of the forthcoming CME programs.
4. *Publications* – how to subscribe to The AAO Journal, the current book catalogue and order form for subscriptions and book orders.
5. *Becoming a Member* – statement of membership criteria and benefits, as well as an application form.
6. *Convocation* – when the Board approves the program for the 1998 Convocation, visitors to the Web Site will be able to review the program and register on-line.
7. *Certification* – AOBSPOMM and FAAO information will be listed, as well as application materials.
8. *OMM Recruiting, Inc.* – there will be a brief explanation of the services offered through this for-profit subsidiary, as well as a link to OMM Recruiting's Web Site.

The future of this technology will present the Academy with a variety of attractive options for its members. Some may be able to use the site for electronic mail (e-mail) with an address as simple as "member name" @ aao.medguide.net. Perhaps the Academy will organize a discussion forum where members can discuss research issues, educational endeavors, osteopathic manipulative techniques, etc. Or, imagine yourself connecting to an "osteopathic chat room" which enables you to dialogue on line with an instructor who could deliver continuing medical education on a variety of topics. The utilization of this technology is only limited to the imagination of the Academy's members and its leaders.

Welcome to the future! Enjoy and be creative. Let us hear from you by e-mail (AAOSJN@aol.com). □

Concept and Technique of the Levitor Orthotic Device (Jungmann Principle)



Sponsored by
**American Academy
of Osteopathy**

July 26-27, 1997
**University of New England -
College of Osteopathic
Medicine
Biddeford, ME**

CME Hours

16 Category 1A

Accreditation

Participants in the Levitor Tutorial will qualify to be directors of certified Levitor Orthotic Centers with all the prerequisite knowledge and skills necessary to choose, fit and monitor patients benefiting from the Levitor Treatment protocol. Physicians with unlimited license will be able to enroll in this program.

Material to be covered

Tutorial Goals
History of the Levitor
Radiographic Changes: Pelvic Index in Normal Aging and with Accelerated Decline
The Levitor, General Principles
Patient Selection
Case History #1
Levitor Mechanics: Bending and Pressure Distribution
Demonstration - Lab: Fitting of the Levitor
Construction of the Levitor
Workshop: Construction of the Levitor
Fitting a Patient: The Art of Bending and Tailor Fitting, Expected and Documented Results
Follow-up and the Role of Manipulation in the Levitor Patient
Lab: Follow-up and Manipulation
Panel Discussion, Case Histories
A Regional Center's First Year Report
Regional Center Expectations
Lab: Levitor Recheck and Means of Modification
Panel Discussion: Questions most often asked by patients and physicians
Office Concerns Regarding the Levitor
Panel Discussion:
General Questions and Answers
Summary of the Course and Distribution of Certificates

Hotel Information

\$135.00 Room Rate. Five minutes from UNECOM. Transportation on your own.

Inn at Goose Rocks

(207) 967-5425

Please ask for block of rooms listed under:
OMM Department; UNECOM

**It is important to make your
room reservations early.**

Make Hotel Reservations

**by calling the hotel directly
by the May 24, 1997**

DEADLINE!

Registration Form

**Levitor Orthotic Device
July 26-27, 1997**

Name _____

Address _____

City _____

State _____

Zip _____

Daytime Phone _____

AOA # _____

Col/Yr Grad _____

**We Accept MasterCard and
Visa (circle one)**

Card Number _____

Expiration Date _____

Signature _____

Course Fee:

AAO Members \$400.00

AAO Non-Members \$500.00

(no discounts available)

Tuition includes the Levitor device, Radiographic postural study, and course materials.

Refund Policy

The American Academy of Osteopathy reserves the right to cancel this educational program if insufficient physicians pre-register. Sufficient registrations must be received 30 days prior to the opening of the course. If you are considering registering for this course less than 30 days prior to the opening, contact the Academy office before making travel plans. In the event of course cancellation by the Academy due to lack of registration, all money will be refunded.

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AAO's CME Calendar

American Academy of Osteopathy
3500 DePauw Boulevard, Suite 1080
Indianapolis, IN 46268-1136
Phone: (317) 879-1881 or FAX: (317)879-0563

June

27-29

Osteopathic Considerations in Systemic Dysfunction
Michael L. Kuchera, DO, FAAO, Program Chairperson
UHSCOM
Kansas City, MO
Hours: 20 Category 1A

July

25-27

Myofascial Release
Judith O'Connell, DO, FAAO
UNECOM
Biddeford, ME
Hours: 20 Category 1A

26-27

Concept and Technique of the Levitor Orthotic Device
Michael L. Kuchera, DO, FAAO
UNECOM
Biddeford, ME
Hours: 16 Category 1A

September

5-7

Urogenital-Abdomen Visceral Manipulation
John L. Glover, DO, Program Chairperson
Holiday Inn North
Indianapolis, IN
Hours: 20 Category 1A

18-21

Fall OMT Update (Intermediate)
Ann Habenicht, DO, FAAO, Program Chairperson
The Contemporary (Walt Disney® Resort Hotel)
Orlando, FL
Hours: 22 Category 1-A

October

20-22

AOA/AAO Convention
AAO Program – Research and OMM
Claudia McCarty, DO, Program Chairperson
San Antonio Convention Center
San Antonio, TX
Hours: determined by the AOA

31-November 2

Counterstrain
John C. Glover, DO, Program Chairperson
WesternU/COMP
Pomona, CA
Hours: 20 Category 1A

November

15-16

Faciliated Positional Release
Eileen DiGiovanna, DO, FAAO, Program Chairperson
Grandview Hospital (tentative)
Dayton, OH
Hours: 12.5 Category 1A

15-16

Basic Percussion Vibrator
(Robert Fulford's Method)
Richard Koss, DO, Program Chairperson
Grandview Hospital (tentative)
Dayton, OH
Hours: 15 Category 1A

Visceral Manipulation

Urogenital- Abdomen September 5-7, 1997

Faculty:

Daniel Bensky, DO
Ken Lossing, DO

CME Credits:

24 Hours – Category 1-A

Program Chairperson:

John Glover, DO

Advance Registration Deadline:

August 5, 1997

SEMINAR FEE:

Prior to August 5, 1997

AAO Member	\$595
Intern/Resident	\$300
AAO Non-Member	\$695

After August 5, 1997

AAO Member	\$645
Intern/Resident	\$350
AAO Non-Member	\$745

Who May Attend:

Educational objectives for AAO are to provide programs aimed to improve understanding of philosophy and diagnostic and manipulative skills of AAO members, DOs who are not AAO members, individuals who possess credentials required for unlimited licensure as physicians and for those in program leading to such license.

Conference Registration

Visceral Manipulation Course
September 5-7, 1997
Holiday Inn North
Indianapolis, Indiana

Name for Badge (please print clearly)

Street Address

City State Zip

Daytime Phone

AOA Number

College and Year Graduated

We Accept MasterCard and VISA

Card Name

Card Number

Expiration Date

Signature

Refund Policy:

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Make Hotel Reservations

by calling directly to:

Holiday Inn Select (North at the Pyramids)
3850 DePauw Boulevard; Indianapolis, IN 46268
Phone: (317) 872-9790 and FAX: (317) 871-5608

\$79.00 single/double

cut-off date is August 5, 1997

Fluid hydraulics in human physiology

by James O. Royder, DO, FAAO

The Principles of Fluid Hydraulics are an essential part of virtually every area of human physiology. Fluid movement is necessary for fluid balance, delivery of leukocytes and red blood cells, movement of lymphatic fluid, venous flow, delivery of glucose, neurotransmitters, hormones, and enzymes, as well as movement of all electrolytes through and across cell membranes. This continuous movement of essential substances depends largely upon fluid hydraulics for both intracellular and extracellular fluid exchange. It is the continuous hydrodynamic fluctuation of waves of fluid that provides the continuous delivery of oxygen rich RBCs, nutrients, and the many necessary substances to the cell membranes that maintains cellular health and integrity.

Cellular metabolism depends on the continuous availability of an abundance of oxygen and various nutrients. Also waste products of metabolism must be continuously washed away to avoid stagnation by the buildup of HC0_3 , lactic acid and other metabolic breakdown products. It is fluid hydraulics that delivers the essential nutrients so that this cellular metabolic exchange can take place in every cell throughout the body.

The arteries and veins deliver a large percentage of the blood flow

into the general vicinity of the cells. Like expressways deliver traffic to the communities and the smaller highways deliver cars deeper into the neighborhoods. In some neighborhoods, there are no roads in between the houses. A similar

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situation is true of our circulatory system. Large arteries and smaller arteries deliver blood into the general area throughout the body. Similar to our neighborhoods, there are no vessels in the extreme periphery. Therefore, it is logical to hypothesize that it is this hydraulic fluctuation of vital fluids that actually delivers extracellular fluids to and across fascial planes, around cellular barriers, into and out of bursae and synovial spaces, and across cell membranes into the most remote cells.

Guyton and Hall¹ state that 20 percent of the body weight is in the extracellular compartment, about 14 liters of fluid. This fluid moves in between the cells, around, across cellular barriers, and fascial planes to wherever it is needed. The fluids move

where there are neither vessels nor natural passageways. It is my hypothesis that it is this continuous hydraulic pressure fluctuation that is the driving force that moves this large, vital fluid volume.

With a discussion of the physics of hydraulics, one must consider pressure as a factor. Pressure of a fluid at rest is defined as force per unit area, with the force being understood to be perpendicular to the area. Therefore, the formula that applies is (P) pressure = (F) force divided by (A) area. $P = F/A$.²

If a column of fluid is in the vertical position, as is the usual case for humans, the pressure exerted is calculated by multiplying the height of the column x the density (d) x the constant for the fluid (g). Therefore, $P = hdg$. The total weight of a column at rest is calculated as: $W = Ahdg$. With fluids in motion, Bernoulli's equation applies taking into consideration *streamline flow and turbulent flow* which considers eddie currents, whirlpool effect, and friction drag.

Pascal's Principle states that a "Change of pressure exerted at any point in a confined fluid is transmitted undiminished in all directions to all points in the fluid."³ The human body consists of many closed fluid systems that respond exactly as Pascal's

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Principle states when pressure is applied. So when one places a finger with the subtlest pressure on a closed container (the body) filled with non-compressible fluid, that force is transmitted instantly to all areas of the body and in all directions, equally. This gives explanation to the far reaching effect of the healing touch. This further explains why merely placing a hand on a person can facilitate changes.

A practical demonstration of Pascal's Principle is with two examiners palpating the same patient. One examiner is palpating the supraclavicular space (Sibson's fascia) while the other is palpating the urogenital diaphragm. When one examiner places a light pressure on the urogenital diaphragm, the other examiner immediately feels the pressure transmitted to the opposite Sibson's fascia, and visa versa. Clearly demonstrating the instant transmission of the hydraulic pressure wave to all areas equally and instantly.

Another demonstration to illustrate the power of the touch is the "V Spread."⁴ With the "V Spread," Pascal's Principle is utilized to direct and focus a fluid force vector within the cranium directly onto the exact point along a suture which is found to be restricted. This gentle continuous force is held on that point until there is a release and free motion restored. In fact, all "functional" types of osteopathic manipulative treatments utilize the principles of fluid hydraulics in one method or another to make finesse corrections of somatic dysfunction.

Ligamentous Articular Strains (LAS) methods, as taught by A. T. Still and William Garner Sutherland,

DO,⁵ use the principles of hydraulics by utilizing the Cranial Rhythmic Impulse (CRI) as a correcting force. LAS treatments⁶ Sutherland taught to correct a restriction by:

1. **Disengagement** (by either compression or decompression)
2. **Exaggeration** (with finesse), and
3. **Balancing** directly on the point of restriction to facilitate a release. This is another practical demonstration of Pascal's law.

With hydraulics, an object weighing very little can exert a tremendous pressure if the force acts only on a small surface area. On the other hand the weight, such as atmospheric air in space whose weight is 5.7 x 10 tons, creates only a relatively small pressure on the earth since the force is spread out over the entire surface of the globe. (1 Atmosphere = 14.7 lb./sq. in.)

Other examples of industrial application of Pascal's Principles are: the hydraulic lift; the hydraulic jack; the hydraulic press which are widely used in industry to bale cotton, cardboard, rags, and etc.; on flood gates; in milling; turning machines; drilling; cranes and hoists; truck lifts; industrial shears; milling; automobile transmissions; and anywhere great

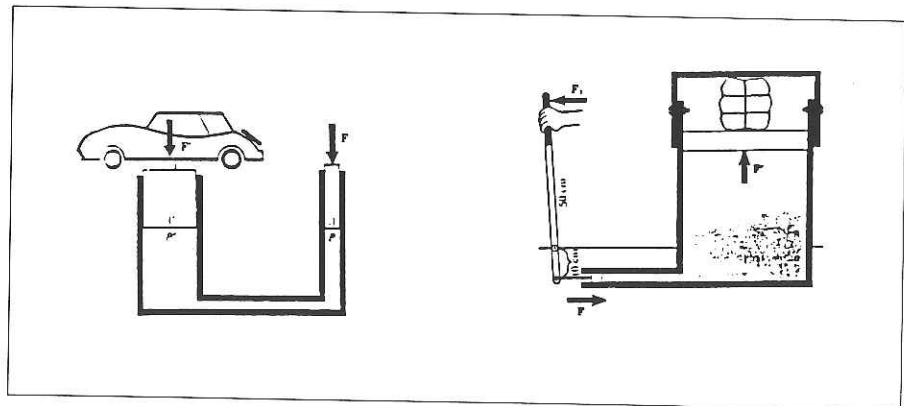
force is required.^{7,8}

The two figures below illustrate examples of how a small force (F) applied to a small piston in a closed system which contains a non-compressible fluid is able to create a far greater lifting force (F-1).

There is a directly proportionate relationship between the force and area of the pistons illustrated. Thus:⁹

$$\frac{F-1}{A-1} = \frac{F-2}{A-2}$$

The circulation of arterial blood, venous blood, lymphatic fluid, the axoplasmic flow, and cerebrospinal fluid movements are directly affected by the principles of hydraulics. The neurovascular compartments and other fluid reservoirs of the body are contained by membranous fibroelastic membrane. Because of the high fluid content of the body, structures respond to every pressure fluctuation. Every vibration, pulsation, or muscular contraction compresses the fluid within the adjacent neurovascular bundle. Not only does the rebound of the elastic stretch of the fascia propel fluids, but also the forces produced by the vibrations and pressure fluctuate against the flexible yet resistant boundaries that send hydraulic fluid waves through their one-way valves. These vibrations provide a continuous flow of fluid along the vessel pathways.



Only the arterial system has its own pumping mechanism, the heart. Not only does the heart propel arterial blood through the arteries, but the vibrations produced by the heart contractions send hydraulic waves through all the adjacent structures as well. The resulting hydrostatic waves are sent out like the ripples radiating out from a pebble thrown into the middle of a smooth pond. Pressure waves are projected outwardly, throughout the body. These pulsation, vibrations, and pressure waves of fluid hydraulics are continuously radiating outwardly, continuously moving essential fluids into all areas of the body.

CRI or "The Primary Respiratory Mechanism,"¹⁰ is a beautiful example of how subtle pressure fluctuations and waves of hydraulic pressure contribute to the process of cellular health.

The circulation of Cerebro-Spinal Fluid (CSF) flows from its point of origin, in the choroid plexuses in the ventricles, around and through the brain and down the spinal cord. The CNS has an inherent motility (CRI) of both the brain and spinal cord that produce rhythmic waves of the CSF fluid movement. The CSF moves not only down the spinal cord but also down the axones, contributing to the transneural axoplasmic flow. "Every organ in the body exhibits the phenomenon of pulsation or rhythmic action"¹¹ which is incessantly active, dynamic, highly mobile, able to move fluid forward, backwards, sideways, circumduct and to rotate."¹² "Four definite motions have been observed at operation."¹³ These motions propel the extracellular fluids into and across semipermeable membranes and deliver nutrients and remove the metabolic waste products even from synovial spaces, bursae, and other

non-vascular compartments. Every cell membrane of the body is continuously and rhythmically bathed with these essential fluids in a fashion similar to the ebb and flow of ocean as the waves roll up onto the beach and then recede back into the ocean, again and again...rhythmically 24 hr/day. These waves of fluid fluctuation are constantly bathing the cells in every part of the body, equally.

Of the four motions of cerebral movements reported,¹⁴ one is synchronous with the cardiac contractions, another coincides with respiration, and one is unrelated to either the cardiac or respiratory motion. The last is an undulating pulsation which is much slower and unrelated to the other three. Harold Magoun, Sr. postulated that the inherent pulsatile motion of the CNS has its origin in embryologic development and sustained this movement of coiling and uncoiling rhythmic motion pattern of the CNS.

Harold Magoun, Sr. did a masterful job of describing the circulation and the hydrodynamic action of the CSF.¹⁵ He further discussed the nerves as "hollow tubes" and the free circulation in the perivascular and perineural spaces that communicate freely with the subarachnoid spaces. The inherent motility of the CNS would provide a dynamic fluctuating force (CRI) for circulation of CSF. The underlying driving mechanism of this movement remains unexplained to this date.

The osteopathic physician skilled in palpation can readily feel the CRI in every structure of the body. By evaluating the CRI for its strength, rhythm, amplitude and timing, one gets the general idea of the general physical and mental state of health of the individual at that moment. Alterations of normal motion can be identified by the attentive physician.

Fluid transport across the semipermeable cell membrane depends on a variety of factors, other than just the hydrodynamic pressure mechanism. Various factors affect the net rate of diffusion through the cell membrane. Several of those to be considered are:¹⁶

1. The Osmolar gradient of various anions and cations.
2. The electrical potential of particles on both sides of the cell wall.
3. Integrity and porosity of the semipermeable cellular membrane.
4. Hydrostatic pressure gradient at the cell membrane.
5. The abundance of available fluids bathing the cell wall.
6. Lipid solubility
7. Thickness of the membrane
8. Number of protein channels through which the substances can pass.
9. Temperature
10. Molecular weight of the diffusing material

Various forces that act on the fluids confined in within the neurovascular compartments, muscle bundles, and other tissues compartments of the body. All these forces conform in accordance to Pascal's Principles. A few of these forces are:

1. Force of adjacent muscle contractions
2. Competency of the one-way valves in the veins
3. Condition of one-way valves in the lymphatic vessels
4. Rebound of the fibroelastic sheath of the neurovascular bundle
5. Effects of the "8 diaphragms" of the body¹⁷
6. Quality and strength of the CRI
7. Electromagnetic vibratory rate of the tissue

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8. Somatic Dysfunction of the contiguous structures
9. Vibrations produced by the cardiac systole and diastole
10. Vibrations produced by arterial pulsations
11. Pressure fluctuation due to pumping action of the respiratory diaphragm
12. Daily physical activities
13. Elevation and dependency of various parts of the body
14. Normal gravitational force...
14.7 lb/sq. in.

All of the above forces are continuously producing hydraulic pressure fluctuations on the body parts that contribute to dynamic pressure changes and fluid movement throughout the body. It is easy to understand how fluids continue to flow on a day-in and day-out basis.

The CRI is the most subtle, most consistent, and most overlooked energy force acting on the closed fluid compartments of the body. The CRI is "the Primary Respiratory Mechanism"¹⁸ or life's force. The CRI ceases at the moment of death. On two occasions I have been privileged to have been palpating the cranium at the moment of death and witnessed the cessation of the CRI. Life was

definitely gone at that very instant.

Water weight in the human body is stated to be 60 percent of the total body weight or 42 liters of fluid.¹⁹ Twenty-eight liters are intracellular...thus 40 percent of body weight. The extracellular fluids comprise 20 percent of the body weight or 14 liters. Blood volume makes up 8 percent or 5 liters. When we consider that blood is non-compressible, one can better appreciate how every fluid wave radiates throughout the entire body millions of times each day. Pascal's Principle of hydraulics is working all day, every day.

Transneuronal Axoplasmic flow of the neuroproteins and viscous axoplasm occurs in at least two rates along the axons. The flow occurs down through the many layers of the axons, around the neurofibrils within the neural membranes encasing the axons.^{20,21} This illustration demonstrates the complex, multilayered nature of the axon itself.

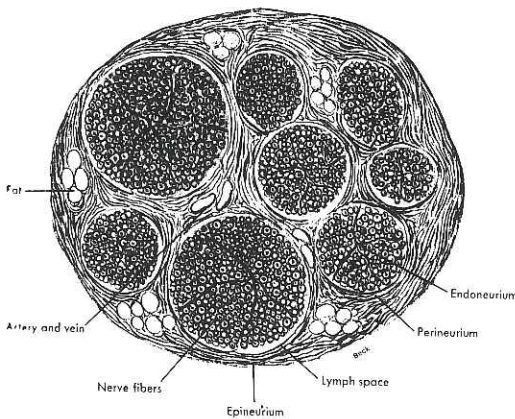
The neuropeptides are synthesized as an integral part of large-protein molecules by the ribosomes in the neuronal cell body. The protein molecules then enter the endoplasmic reticulum of the cell body and

subsequently the Golgi apparatus, where two changes occur: First, the protein is enzymatically split into smaller fragments and thereby releases either the neuropeptide itself or a precursor of it. Second, the Golgi apparatus packages the neuropeptide into minute transmitter vesicles that are released into the cytoplasm. Then the transmitter vesicles are transported all the way to the tip of the nerve fiber by **axonal streaming** of the

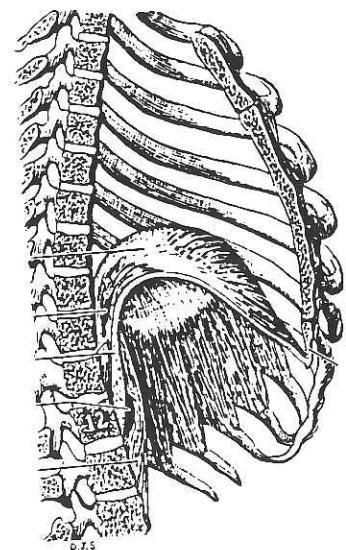
axon cytoplasm, traveling at the slow rate of only a few centimeters per day.

"These vesicles release their transmitter in response to action potential."²² These neuronal proteins are thought to have both morphogenic influence, as well as, genetic expression and regeneration of nerve-to-muscle transmission. Omer and Spinner²³ state that these axonally transported materials may have a "yet unknown trophic factor." The health and function of the organ tissue depend upon a regular and abundant supply of these neuronal proteins for its health and function. As A. T. Still stated, "Cerebrospinal fluid is one of the highest known elements that is contained in the human body and unless the brain furnishes this fluid in abundance, a disabled condition of the body will remain. He who is able to reason will see that this great river of life must be tapped and the withering field irrigated at once or the harvest of health be forever lost."²⁴ Guyton seems to be partially validating Dr. Still's sage statement.

The dynamic effects of the respiratory diaphragm is keystone to fluid movement and, therefore, should always be considered in any



Peripheral nerve



discussion of fluid movement. During inhalation, the diaphragm flattens as the thoracic cage expands, sucking air into the lungs and creating an increase in the interthoracic and inter-abdominal pressure. During inhalation, venous return comes to a virtual standstill and causes temporary congestion of the head, neck, abdomen and extremities. This increase in pressure on the mediastinum and the sympathetic plexus, results in an increase sympathetic tone and the resulting physiologic effects.

A proposed model or paradigm to demonstrate hydraulics of the human body would be a longitudinal fluid filled structure with longitudinal interconnecting compartments with eight one-way lateral baffles. The material of the container and compartments are made of tough, flexible, and nonelastic material. Fluid is able to fluctuate freely with every vibration or pressure change from one end to the other as long as all the baffles are free to move. If one were to visualize that any one of these eight baffles were to become stuck, it is easy to see that the free flow and fluctuation of fluids would be seriously reduced. A restricted baffle becomes a "choke point",²⁵ that interrupts the free fluid movement. The same restriction occurs in the body when one of our eight diaphragms becomes impaired.

Using the preceding as our model, the anatomic diaphragms represent "choke points" for fluid movement. In the human body, these anatomic fluid "choke points" are listed as follows: (from the ground up)

1. Plantar fascia;
2. Popliteal fascia;
3. Urogenital diaphragm;
4. Respiratory diaphragm;
5. Thoracic inlet;

6. Occipito-Atlantal fascia;
7. Cerebellar tentorium; and
8. Diaphragma sellae (Sella Tentorium).

Any somatic dysfunction of these "diaphragms" or "choke points" can substantially impede healthy lymphatic and venous circulation.

A restriction of the normal physiologic motion due to somatic dysfunction of any one of these diaphragms will interrupt free fluid fluctuation throughout the body. For one to enjoy a full measure of health, all of his diaphragms must be moving freely for free fluid exchange throughout the entire body. Whenever physiology is interrupted in this manner, the opportunity for disease to begin is present.

With the consideration of the Principles of Hydraulic, it becomes clear what a broad range of effects these principles have in human physiology. This understanding is especially useful to those of us who study and apply osteopathic treatment utilizing craniosacral and other functional treatment methods. It is through these principles that we are able to project and focus fluid forces and feel when **balanced membranous tension** is achieved and when the **release** occurs. With the slightest touch, the pressure at all points in the body is increased proportionately. It is no wonder that we are continuously amazed by the potency of this type of finesse treatment.

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[Editor's Note: James O. Royder, DO, FAAO is a 1965 graduate of University of Health Sciences, College of Osteopathic Medicine in Kansas City, MO. He is board certified in osteopathic manipulative medicine and has been a fellow of the American Academy of Osteopathy since 1978. Dr. Royder currently is retired and residing in Lancaster, Texas.] □

Letter to A.T. Still

Dear Doctor Still,

It may surprise you to hear that we as a profession still seem to have a great deal of trouble defining osteopathic medicine. We all seem to agree that there is a distinct philosophy and a set of concepts that make up the foundation for who we are. Yet, we seem to have difficulty articulating this to others, especially to the public.

One problem I see is that while most DOs would agree that osteopathic manipulation (OMT) is NOT the sum total of osteopathic medicine, we often seem to define everything we do in terms of manipulation. Indeed, I have met some DOs that feel strongly that OMT is the distinctive difference between us and other practitioners. I guess the

problem with that for me is that other kinds of practitioners can learn to manipulate, too, but this would not necessarily make them osteopathic practitioners. I am reminded of something written by Percy H. Woodall, MD, DO, in his book, *Osteopathy: The Science of Healing by Adjustment* (p. 23): "...while manipulations are a necessary part of osteopathy they are relatively of minor importance. The matter of prime importance is the ability to locate the maladjusted part and to interpret its effects. To do this requires the most comprehensive knowledge of all parts of the body and their respective uses, and of the evidences of their derangement. Without this knowledge

of structure, function, and disorder, no degree of manipulative skill can make one an osteopathic physician. Merely to be able to manipulate no more makes an osteopath than the ability to cut makes a surgeon."

Somewhere in these words lies at least part of the true definition of an osteopathic physician. The application of our underlying philosophy and concepts, that culminates in our choice of treatment, be it OMT or some other remedy, is what makes us distinctive in the world of health care. We must always remember this when we ponder the nature of osteopathic medicine.

Your ongoing student,
Raymond J. Hruby, DO, FAAO

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Kenneth Johnson, DO
Membership Committee Chairperson

Muscle tones

by Brian J. Waldron, DO

Anne Carlson was the first patient ever to show up in my examining room with instrument in hand. When I saw her, she was dressed in a pale blue patient's gown and was carrying a trumpet case.

As I would soon learn, Anne was a 35-year-old musician who had recorded professionally and performed around the world, playing classical works with well-known orchestras. Her health had been perfect until two years ago. That is when, she told me, she began developing a painful burning and stiffness in her neck and upper back. This constant pain had been joined by another bizarre malady: her head and neck trembled, but only when she played her trumpet.

With such an impediment, Anne said, she could not perform. She had tried resting for two months, avoiding her trumpet in the hope that the burning pain and trembling would go away. They did not. The problem stumped her internist. He could not identify it, so he referred her to a neurologist. The neurologist said she was suffering from stage fright and essential tremor—a term applied to movement for which there is no known cause—and prescribed one of the beta-blocker drugs that keep the brain from registering anxiety-producing chemical signals. When that treatment failed, Anne tried an acupuncturist. The acupuncturist recognized that the problem was beyond her expertise, so she referred Anne to me, an osteopath. An osteopathic perspective, she thought, might allow some new insight into Anne's symptoms.

Osteopaths are trained to understand how muscles interact with joints, nerves, and organs; and more than our classically-trained medical colleagues, we apply that understanding of biomechanics to our treatment of illness and injury. The difference is chiefly one of emphasis. We receive the same medical education as MDs, and we are licensed to perform surgery and prescribe medications. Yet, unlike MDs, we are educated to perceive how structural problems—such as an injury in one part of the body—can have a ripple effect, causing pain or discomfort in other parts of the body. The osteopathic goal is to prevent disease by identifying structural problems before they become chronically disabling. Thus, again unlike MDs, we frequently use techniques of manipulation and stretching to help retrain muscles, joints, and connective tissue that have been stressed or damaged. For some painful conditions I have treated, these techniques can provide more relief than drugs.

By the time I saw Anne, she was desperate. Music, she said, provided her with more than just a livelihood—it gave her, her very identity. Now her years of devotion were in jeopardy, and the passion that burned within her was being extinguished, all without apparent reason. Her eyes quickly filled with tears as she described how frustrated and helpless she felt.

"Have you had anything similar to this before?" I asked.

"No."

"What makes it better or worse?"

"Acupuncture helps the pain, but it doesn't stop my head from shaking. And I have noticed that the problem gets worse if I am tired or stressed."

Her medical history was unrevealing. A left shoulder dislocation at age two. Coronary artery disease in both parents. No drug or alcohol abuse.

Anne offered to demonstrate her problem. She opened the case and raised the trumpet to her lips. Her head began wobbling left and right, as if it were gesturing "no, no, no. . ." When she lowered her arms, her head became still.

"Please do that again," I asked politely, trying to maintain a professional demeanor. In reality, Anne had just blown me out of my seat, without playing a single note. But doctors learn to remain poker-faced; we can deliver a neutral "Hmm" when, in fact, we want to yell, "What the hell was that?"

Anne obliged. When she lifted her trumpet, her head wobbled. When she lowered it, the wobbling stopped.

"Would you do it one more time, but this time without your trumpet?"

Again the tremor appeared, just as if she had the trumpet in hand.

"Now just raise your left hand as if you are holding your trumpet." Anne's head wobbled as before.

"Now with only your right hand."

This time the movement was still present, though less pronounced. Just lifting either arm was enough to produce the tremor.

I went on with the examination.

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Anne's gait was normal, as were her speech patterns, eye movements, and facial expressions. Then I tested her sensory system: her pupils' sensitivity to light, her gag reflex, her sense of smell, her hearing. All responses were normal. The cranial nerves, which control the muscles of the face and head, were working properly.

Next, I checked the strength of Anne's major muscle groups, as well as her sensitivity to a pin prick, touch, temperature, and vibration. I also checked her deep tendon reflexes and finger positions. I was looking for signs of problems in the cerebellum and basal ganglia, the brain regions that control movement. So far, all was normal.

I did notice, however, that Anne tilted her head ever so slightly to the left and that she carried her left shoulder higher than her right. To check the muscles that control this part of the body, I stood behind her and placed my hands over the tops of her shoulders. My fingertips rested just above her collarbone, which is where the uppermost ribs are located. As Anne breathed in and out, my hands were gently lifted and lowered by the ribs' movement. The motion of Anne's left shoulder felt tight and locked. I probed the muscle groups in the shoulder and neck area. The scalene muscles and the sternocleidomastoid muscle were shortened on the left side.

The scalene muscles are a group of three muscles on each side of the neck that help bend and twist it. The lower ends of the scalene muscles attach to the uppermost ribs; the other ends attach to the highest vertebrae in the neck. The sternocleidomastoid muscles—the thick, rope-like muscles that run along each side of the neck—help turn the head from side to side. These muscles attach at both the sternum (the breastbone) and collar bone, then extend up and attach to mastoid process, the knobby bump behind each ear.

It took no great insight to understand why Anne's head was slightly tilted. The muscles that controlled the left side of her neck and shoulder were involuntarily contracting and tugging at their attachments. The smaller muscle group surrounding the delicate vertebrae in Anne's neck were also taut on the right side. Osteopaths call this alteration of how muscle attaches to bone "somatic dysfunction." What I still did not have, however, even after this diagnosis, was an explanation for Anne's peculiar trembling.

I needed more data. I drew blood and obtained a urine sample. I also requested tests to measure the amount of copper and copper-carrying protein in Anne's blood. There is a rare metabolic disorder called Wilson's disease that is caused by copper accumulation in the liver. When the copper migrates to the brain, it will trigger strange, tremor-like movements. Finally, I wanted a magnetic resonance image of Anne's head, to determine whether a brain tumor or a bulging broken blood vessel could be the cause.

Meanwhile, I suggested to Anne that some osteopathic manipulation might help restore symmetry and normal function to her tightened muscles. I did not expect to make the tremor go away, and I thought I could alleviate the burning pain and the persistent muscle spasms.

After I had Anne lie facedown on the examining table, I started massaging and stretching all the muscles that lie parallel to the vertebrae in the neck. Then I put my hands on her neck and gently rotated it to the side as far as it could move comfortably. While I held her in this position, I asked her to resist my gentle movements. We repeated this several times. Her muscles began to soften.

Satisfied that her muscles were loosened, I teased her head with a slight twisting movement. This

technique often helps restore the alignment of the affected joint and improve its function. After doing this, I checked to make sure that Anne's neck was moving from side to side more easily. I then began working on the muscles attached to her left uppermost ribs to restore normal movement.

When I finished, we made another appointment for the following week. I asked her to take a warm shower when she got home and to call me if she had any problems.

When I got Anne's lab work back, all the results were normal. The MRI showed no signs of abnormalities. I called Anne to tell her that the results were normal and that she need not fear the worst.

I had a strong hunch that Anne was suffering from some form of dystonia, a family of neurological conditions that affect muscle movement. In idiopathic torsion dystonia, for example, the patient's large muscle groups are affected, causing the body to bunch up in uncomfortable positions. Other forms, called focal dystonias, affect isolated muscle regions. Among them are writer's cramp, which causes spasms of the hand muscles, and blepharospasm, which causes blinding contractions in the muscles that shut the eye.

Anne was probably suffering from cervical dystonia, the most common of all dystonias. Cervical dystonia affects muscles that attach to the vertebrae in the neck, and its most striking characteristic is a strange twisting of the head. The condition usually crops up among adults, and its cause is unknown, although sometimes trauma or drugs are involved. In Anne's case, I could only speculate that hours of practicing the trumpet may have taxed the nerves and muscles controlling her upper arm and neck region. The first sign of the disorder is a subtle and intermittent muscle spasm. With time, the spasm

becomes more pronounced and constant. A tremor often accompanies the spasm, but it is unusual for the tremor to be more prominent than the spasm. And Anne's tremor seemed to be the most prominent symptom.

To confirm that I was on the right track, I called a neurologist friend who specializes in movement disorders. I was pleased when he agreed with my diagnosis (always a supreme compliment coming from a colleague, and particularly from a friend). Then he added something I was eager to tell Anne. "You know," he said, "some of these patients go for years without the correct diagnosis. Some are told it is in their head, and they start believing it. It could be enough to drive one crazy."

As it turned out, though, my reassurance was not necessary. When Anne arrived for her next appointment, she appeared different. Her head was not tilting to the left as much, and she was smiling.

"Just watch!" She said.

She raised the trumpet to her lips. To my astonishment, the tremor had changed from the coarse wobble to a faintly perceptible side-to-side shaking.

We repeated the neurological exam. Then we went over the results of the tests I had ordered. I explained that since the normal results had ruled out many troubling possibilities, the most likely remaining cause was cervical dystonia. Then I told her about the various treatments to control the condition. A relatively new therapy involves injecting botulinum toxin into the spasming muscle. The toxin binds to receptors on nerve endings, which reduces the nerve's ability to release the chemical signal—acetylcholine—that causes muscles to contract. The resulting paralysis of the muscle fibers can provide relief from the spasm for many months. Oral medications are also often effective. Some are muscle relaxants;

others block acetylcholine receptors at the nerve-muscle junction.

"But I am putting the cart before the horse," I added. "I want to get a second opinion from a specialist, and I want to check out the work we did last time."

When I reexamined Anne, her muscles were more relaxed and symmetrical.

"I do not mean to sound in the least disrespectful," said Anne, "but do you know why I am doing better?"

It was an excellent question. Was it a coincidental spontaneous remission, or had the osteopathic treatment fixed the problem in the nerves that communicated with the muscles in her left upper arm and neck? Unfortunately, I did not know the answer. No one does. There are some theoretical arguments for how osteopathic manipulations might affect the transmission of chemical signals along nerve pathways, but, in truth, there is precious little hard evidence to go by. And the thought that I might have helped her without knowing why was rather humbling.

After treating Anne, I suggested that she contact one of several neurologists my friend had suggested for further evaluation. During the weeks before her appointment with

the specialist, I treated her a few more times. Although the pain and stiffness had virtually vanished, a slight tremor remained.

The neurologist started Anne on two oral medications to treat the tremor. One of them blocks acetylcholine receptors on nerve endings in muscles and in the brain; the other is an anticonvulsive drug. After a while, we discovered that the first drug alone worked well enough to eliminate Anne's faint tremor.

Over the next month, Anne returned to me a few more times. When I last met with her, she was free of the tremor and music had returned to center stage. Before she left, she placed her hands together and bowed graciously to me in gratitude. I bowed in return, in humility.

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[Editors note: *Brian J. Waldron, DO is a 1985 graduate of New York College of Osteopathic Medicine. He currently is in a family/osteopathic manipulative medicine practice in New York City. He is certified in family practice.* □

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(Intermediate level)

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SEPTEMBER 18-21, 1997
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- "Counterstrain"
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- "High Velocity/Low Amplitude"
- "Exercise"

FRIDAY, SEPTEMBER 19 (7:00 AM - 1:30 PM)

- Breakfast Lecture Coding Update
- "Thoracic Trouble-shooting"
(to include various modalities approach - HVLA, ME, counterstrain, indirect-MFR & cranial)
- Skills Session: Thoracic
- "Cervical/Suboccipital Troubleshooting"
- Skills Session: Cervical/Suboccipital

SATURDAY, SEPTEMBER 20 (7:00 AM - 1:30 PM)

- Breakfast Lecture Coding Update
- "Lumbar/Pelvis Troubleshooting"
- Skills Session: Lumbar/Pelvis
- "Upper & Lower Extremities Troubleshooting"
- Skills Session: Extremities

SUNDAY, SEPTEMBER 21 (7:00 AM - 1:30 PM)

- Breakfast Lecture - Coding Update
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A successful use of cranial-sacral osteopathy in the treatment of post-traumatic headache following subarachnoid hemorrhage

by Lora Barke, MSIV*, Sharon Gelman, MSIV**, and CDR. James A. Lipton*/**/**

*Chicago College of Osteopathic Medicine

**New York College of Osteopathic Medicine

***Pain Clinic, Naval Medical Center, Portsmouth, Virginia 23708

Introduction

Posttraumatic headaches are among the most common somatic complaints following mild head injury. In the past, 79 percent of patients who were evaluated 3 months after minor head injury complained of persistent headaches. Head injuries can result from blunt head trauma during a motor vehicle accident, the mechanism being shearing stresses on the brain set up by rotational torques. The type of damage can range from mild to severe and can include, edema, herniation, laceration, and thrombosis.²

Subarachnoid hemorrhage can be a result of these cerebral contusions, with subsequent posttraumatic headache. A subarachnoid hemorrhage can cause meningeal irritation of the dura from dilated blood vessels. Also, serotonin and plasma kinins which effect pain receptors in the meninges can lead to neck pain which is most often experienced in the extensor area, along with the headache.³

Patients recover from posttraumatic head injury in varying degrees. There are numerous articles citing the presence of headache, along

with various other neurological sequelae occurring after a blunt head injury.^{4,5,6} Retrograde amnesia is seen in some patients after a trauma, while other patients may experience a range of symptoms including seizures, vertigo, irritability, and psychiatric disturbances.^{3,7} The commonly exhibited posttraumatic headaches are often treated symptomatically with analgesics, although other means of therapy may be employed to aid in returning the patients to their previous level of function.

This paper presents a case study of a patient with a posttraumatic headache coincident with a subarachnoid hemorrhage. The patient had obtained no relief from various analgesics and suffered for four months from unrelenting headaches. She was seen by a psychiatrist who utilized an osteopathic approach in an attempt to relieve her headaches.⁸

Report of Case

The patient was a 38-year-old Cherokee female who was consulted by neurology of the physical medicine service on June 5, 1996, after being involved in a motor vehicle accident

on February 14, 1996. She had been a seat-belted driver who struck a tree at 65 miles per hour to avoid hitting a deer in the road. After the collision, she lost consciousness for an estimated two and a half hours, and was taken to a nearby hospital. An MRI documented that a subarachnoid hemorrhage was diagnosed, along with a moderate concussion. She also sustained numerous lacerations to her head, face, and legs.

Upon discharge from the hospital, she experienced persistent headache, neck pain, and multiple visual disturbances including blurred vision and "black spots" in her visual field. In addition, she sustained retrograde amnesia, alteration in short term memory, and decreased concentration. She also reported numbness in the right side of her face and difficulty sleeping at night.

An ophthalmologic exam was unremarkable. A neurologic exam was also unremarkable except for decreased sensation to pain, light touch, and vibratory stimuli on the right frontal face. On March 8, 1996, a follow-up MRI was normal. By this time, her memory lapses had

→

disappeared. However, she was still left with headaches, neck pain, visual changes, and difficulty sleeping. The patient was not considered a surgical candidate based on her strong neurologic exam. Symptomatic treatment was recommended by neurology with the use of various medications including aspirin, acetaminophen, cyclobenzaprine, ibuprofen and nortriptyline. Drug therapy was unsuccessful and the patient continued to suffer with daily pain of 20 to 80 percent (with zero being no pain and 100 percent enough to black out) from the persisting headaches. By the time neurology referred the patient to physical medicine, she had been enduring headaches for almost 4 months, which is a longer duration than 59 percent of patients experience.⁷ The headaches were located on the right side of her face of constant duration and daily frequency. She still complained of difficulty sleeping and visual disturbances, but denied any extremity weakness or loss of continence of bowel or bladder.

The past medical and surgical history was noncontributory. She denied tobacco abuse and her daily alcohol consumption was limited to one glass of wine with dinner.

Physical exam was unremarkable except for numbness in the area of cranial nerve V on the right. Structural examination revealed multiple cervical and thoracic, as well as cranial somatic dysfunctions. The most significant somatic dysfunctions were at the junctions of the right sphenoid, maxillary, and temporal bones. Jaw opening was smooth and symmetrical about the midline with no palpable or audible clicks.

Subsequent laboratory studies revealed a normal CBC, blood chemistry, rheumatoid factor, and erythrocyte sedimentation rate.

After initial cranial treatment, the

patient was given palatal pressure exercise, instructions to use the pool 3 times a week, and a prescription for hydroxazine hydrochloride 25mg qHS for anxiety and sleep. She was also instructed to discontinue any alcohol use.

The patient was seen a total of 12 times from June 5, 1996, to August 9, 1996. Manipulation consisted of muscle energy and high velocity techniques addressing the cervical and thoracic somatic dysfunctions. Most frequently, extension lesions were present at the OA, C3-5, T4, and areas of ribs 3-5. The cranial manipulation was used to achieve a good balance of motion of the sphenoid bone, and freed any restrictions of motion in the temporal, frontal, and maxillary bones, as well as in the sacrum and occiput.

At the fourth visit, her subjective visual changes resolved. At the fifth visit, the numbness resolved. During this time, the patient reverted from a condition of constant pain to one in which she would be pain-free for two days. The eighth visit revealed a normal neurologic exam, including a symmetrical pin prick where there had previously been decreased sensation. An adjunctive regimen of tramadol was tried, but was discontinued after one dose by the patient due to intolerance.

On the ninth visit, the patient felt a "pop" on the right side of her face, at the sphenotemporal junction; and afterwards, her pain decreased. She was also able to discontinue hydroxazine hydrochloride and sleep throughout the night. On the twelfth visit a similar, but louder, "pop" was heard and felt by the patient in the right TMJ. Subsequently, the patient remained headache-free and pain-free. On the last visit, the patient reported that she continued to remain headache-free for the past month, including resolution of all mild tension headaches she occasionally suffered

from before the accident. In addition, she was sleeping throughout the night without medication.

Discussion

Motor vehicle accidents are widespread in this country leading to over three million injuries with an extremely high incidence of headaches following head trauma. One study suggests this number may reach 84 percent of all people involved in motor vehicle accidents.^{8,9} Posttraumatic syndrome refers to headache accompanied by neurological disturbances such as impaired concentration, malaise, and vertigo following head trauma.⁶ The patient, discussed in this case, suffered from all these and more.

Posttraumatic headaches can develop a chronic course and remain extremely difficult to treat.^{9,10,11}

Patients can be referred to a headache clinic and treated with a variety of medications from analgesics to antidepressants. The patients who suffer from these headaches can have a marked alteration in their life-style and continuing discomfort unrelieved by medications.⁴ In addition, the medication approach can result in unwanted side effects which can be quite severe. Therefore, the use of an effective physical medicine treatment plan should be considered.

Conclusion

In this case the physical medicine approach, including osteopathic manipulative medicine, was a benefit to the patient in the treatment of a posttraumatic headache.

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Affiliated Organization's CME Calendar

June 14-18

Basic Course
"Osteopathy in the Cranial Field"
The Cranial Academy
Hours: 40 Category 1A
CCOM
Downers Grove, IL
Contact: Patricia Crampton, Exec. Dir.
(317) 594-0411

June 19-22

Annual Conference
The Cranial Academy
Hours: 40 Category 1A
Intercontinental Hotel, Downtown
Chicago, IL
Contact: Patricia Crampton, Exec. Dir.
(317) 594-0411

August 1-3

Intermediate Course "The Face"
Sutherland Cranial Teaching Foundation
Courtyard by Marriot, Lexington, Kentucky
Hours: 14 Category 1A
Contact: Judy Staser
(817) 735-2498

August 4-8

Basic Cranial Course
Viola Frymann, DO, FAAO, Course Director
Claremont, CA
Hours: 40 Category 1A
Contact: Marlene Weyuker
(916) 447-2004

August 8-10

Jones' Counterstrain
Eastmoreland Hospital and
Northwest Osteopathic Medical Foundation
Eastmoreland Hospital, OMM Dept.
Portland, OR
Hours: 20 Category 1A
Contact: Al Turner, DO
(503) 230-2501

August 9-10

Sutherland's Methods
for Treating the Rest of the Body
Dallas Osteopathic Study Group
Dallas, TX
Hours: 16 Category 1A
Contact: Conrad Speece, DO
(214) 321-2673

September 13-14

Osteopathy in the 90s - Annual Update
Arizona Academy of Osteopathy
Hours: 11 Category 1A
Poco Diablo Resort
Sedona, AZ
Contact: Marilyn Wells, DO
(602) 266-5055

September 25-28

26th Annual Fall Convention
New England Osteopathic Association
Summit Hotel and Conference Center
Bethel, ME
Hours: 28 Category 1A
Contact: Denise Gendron
(207) 283-0171

September 29 - October 3

Intermediate Cranial Course
Viola Frymann, DO, FAAO, Course Director
Claremont, CA
Hours: 40 Category 1A
Contact: Marlene Weyuker
(916) 447-2004

October 4-5

OMT and the Hospitalized Patient
(Hands-on in the Hospital)
Eastmoreland Hospital and
Northwest Osteopathic Medical Foundation
Eastmoreland Hospital, OMM Dept.
Portland, OR
Hours: 14 Category 1A
Contact: Al Turner, DO
(503) 230-2501

October 4-6

SCTF Intermediate Course
"Osteopathic Utilization of Optometry"
UNECOM; Biddeford, ME
Hours: 27 Category 1A
Contact: Joseph Field, DO
(207) 967-3311

October 10-12

Continuing Studies
"The Cranial Base Revisited"
Sutherland Cranial Teaching Foundation
UNECOM, Biddeford, Maine
Hours: 16 Category 1A
Contact: Judy Staser
(817) 735-2498

Letters to the Editor

Letter to the Editor:

I recently attended the osteopathic medical Convocation whose theme was "Body, Mind and Spirit." Naturally, a topic like this is subject to different interpretations, but I was disappointed to hear sectarian interpretations which ignored the diverse cultural and religious background of others who made up the group. I would like to suggest some nonsectarian thoughts on the subject.

The body is a mass of muscle, bones and fluid that is integrated through its communicating systems, via its nerve and blood supply. At its highest level of activity the nervous system creates the mind. The mind is capable of producing the intangibles, the abstract qualities of thought — inspiration, intuition, cogitation, and memory. All this is accomplished through the nervous system. We tend to separate cogitation and emotion, and, indeed, the major areas of the brain involved may differ, although the evidence is that multiple areas are involved in all mental functions. Perhaps the difference between logic and emotion is that we may consciously follow the path of thought in the former, whereas, we are sometimes unconscious of the path in emotion or intuition.

Our needs and our satisfactions are determined by our physical bodies but developed and controlled according to our minds, i.e. through our belief systems. These belief systems are concerned with values. Values take us into the area of moral, aesthetic and social sense, recognizing goodness, beauty and truth.

Sometime in the course of the individual's development one may come to the point of examining the

mores that one has inherited. This is healthy. Respect for others (a value) demands that we realize that the totem of the aborigine is as spiritual and holy as any modern religious icon. The spiritual qualities representing the highest development of cogitation and the most altruistic of emotions are not confined to any creed. The creed develops in each individual according to inheritance, developmental environment and the earnest effort to probe and utilize the resources of one's own body and mind.

Some implications I see:

1. Body, mind and spirit are all ultimately physically dependent and perhaps the only miracle is life itself.
2. All religions are important as evidence of thought and an attempt to develop a belief system, and are therefore "holy."
3. The closer to natural law that the mind pursues its belief systems, the better the chances of development. The concept of *deus ex machina* inhibits growth.

Wholism seeks to realize the potentials within the mechanisms of body, mind and spirit with the aid of, and within the —almost limitless but nonetheless limiting — bounds of natural law.

Respectfully yours,
David Heilig, DO, FAAO
Drexel Hill, PA



Dear Dr. Hruby:

I have recently read and reread, with interest and consternation, Dr. Norton's recent article on his study "A Challenge To The Concept Of

Craniosacral Interaction."

I have several comments:

1. There is a natural lag, in time, of the cranial rhythm as it passes from the occiput to the lower extremities.
2. Some patients have as somatic dysfunction, distortion of the Cranio-Sacral harmony. This, I find, in particular, in the traumatic newborn birth and post trauma to the body from accidents of many kinds especially falls to the coccyx and severe head trauma of *past or present* experiences.
3. I have strong feelings about your definition of the "determinants of the cranial rhythm as perceived during palpation."

Holding the breath does not appreciably change the cranial rhythm. The cranial rhythm changes very little immediately after the cessation of the cardiorespiratory rhythm at death. The cranial rhythm stops in extension approximately 10-15 minutes after death as a slow diminishment because of the CNS conclusions. "The contributions of soft-tissue pressures" is a very far fetched consideration in my opinion.

The cranial rhythm has its own life energy which is most likely controlled by a center in the CNS not as yet found, but probably within the medulla where all other major rhythm control centers exist.

One book that might help clarify the research results is *Stalking The Wild Pendulum* by Bentov. His studies have shown that all body rhythms are in harmony when wellness is dominant. Un-wellness always shows a lack of one or more of the body's contributor rhythms to the normal wellness harmony. →

Perhaps Dr. Norton's research could be directed to the control center idea. Positive or negative results in this quest would be productive to our search for answers.

My Best Regards, "Keep the pot stirring."

Sincerely,
Richard C. MacDonald, DO
North Palm Beach, FL



Dear Dr. Hrubby,

With great interest, I have several times read the article "Osteopathic Medical Profession: Who are we & Where are we going? A student perspective"¹ by Binyomin M. Nemon, MS-IV. Just before his conclusion, he challenged us to take action. Here are my thoughts.

Osteopathic students are in a very stressful position in today's world. Most students accumulate \$100,000 plus in educational loans. They are entering a profession that has full practice licensure, but is unrecognized by most of the population. They witness a market place where health care delivery is changing. The use of physician extenders, for example, may threaten the demand for medical school graduates. In addition, Mr. Nemon describes stressors of osteopathic identity and direction.

It is imperative that you become one of the mentors you wished for. Student and colleagues can learn from you by example. You can impact colleagues outside of your practice by submitting your innovative ideas to the JAOA as abstracts and making presentations at the AOA Scientific Conventions. Your papers, like the one you already wrote, can be peer reviewed by experts in the field and published for the profession to enjoy. You can join committees in the AOA/AAO and earn a voice. Decisions reflective of your concerns can be enacted with large scale effort. Does any of this need to be funded by the AOA? You and I make two, how about 100 more? 1000 more?

Is there really a need to teach first and second year students everything-there-is-possibly-to-know about osteopathic principles and practice? Ideally, no. Medical knowledge is a life long process. Most of the real learning is when the physician is responsible for a patient and must make independent decisions. That is where "the rubber hits the road." Undergraduate OMM labs begin to lose their luster after your partner has been treated several hundred times. Try treating hundreds of people for the first time.

I do not consider an osteopathic student to be, as you humbly identify yourself, as "a mere student." I compliment your study and your hard work to publish this material. The osteopathic profession, particularly the AAO, recognizes students as a valuable resource. It is no wonder that student attendance has been higher than practitioner attendance at AAO Convocations.

You identify some osteopathic students as "wannabe MDs." I think that there should be a network for "wannabe DOs." This could be orchestrated by the AOA. "A" list of osteopathic mentors (versus B, C, D or F rated) would have to demonstrate awareness and practical application of osteopathic identity and direction. Over all, I think that undergraduate OMM department teaching is phenomenal. Imagine an educational system where osteopathic homeostasis exists among all of the departments and clinical rotation sites.

What does it take to unify the profession? We need identity, substantiated by evidence and direction, as scientific and clinical leaders of health and healing. We can objectively measure cranial bone motion,² so tell the world. We know that osteopathic physicians intuitively practice with a very sophisticated understanding of tissue elasticity that can be measured and analyzed.³ We recognize the importance of neurotro-

pism.⁴ Is it impossible to show how palpatory diagnosis and treatment relates to axoplasmic flow? There is a saying in the racing world: "how fast do you want to go?" The speed of your race car is directly proportionate to the funding of your sponsors. I say "how much do we want to know?"

Warren Bennis is considered an authority in the business world. His new book *Organizing Genius*, investigates Great Groups. "There are groups, and there are Great Groups . . . Great Groups hope to 'make a dent in the universe.'"⁵ His "take home lesson" includes the topics that I have listed for you.

Take Home Lesson

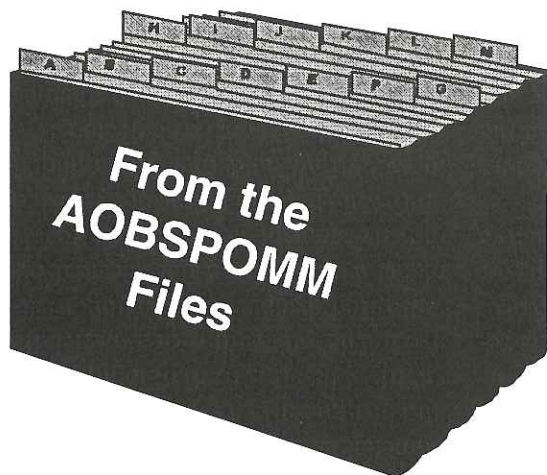
Organizing Genius – Warren Bennis

1. Greatness starts with superb people.
2. Great Groups and great leaders create each other.
3. Every Great Group has a strong leader.
4. The leaders of Great Groups love talent and know where to find it.
5. Great Groups are full of talented people who can work together.
6. Great Groups think they are on a mission from God.
7. Every Great Group is an island-but an island with a bridge to the mainland.
8. Great Groups see themselves as winning underdogs.
9. Great Groups always have an enemy.
10. People in Great Groups have blinders on.
11. Great Groups are optimistic, not realistic.
12. In Great Groups the right person has the right job.
13. The leaders of Great Groups give them what they need and free them from the rest.
14. Great Groups ship. (aka produce)
15. Great work is its own reward.

How does this list relate to our profession? DO we have what it takes to make a Great Group?

Michael John Warner, DO
Johnstown, PA

Letters continue on page 37



OMM and Asthma

by James S. Jealous, DO

Chief Complaint

This 37-year-old Caucasian male with a quite healthy appearance entered my office with a chief complaint of asthma.

History of Chief Complaint

The patient explained to me that he had an onset of asthma approximately two years ago and had seen several specialists, including pulmonary specialists, who attributed his asthma to wood dust in his workshop. Since the onset of the asthma, the patient had more frequent colds that very quickly became bronchitis and he was easily re-infected after these episodes. The patient had taken multiple antibiotics and the more common medications were no longer effective against his problem. The patient's residual symptoms that had become chronic since the onset two years ago were copious mucus production in the morning and a decrease in his general sense of well-being and also some exercise intolerance. The patient was taking azmacort and alupent on a daily basis for his asthma and it was only mildly well controlled with the medication. Upon further questioning, it was discovered that the patient had become divorced two years ago and his mother had died two years earlier from pulmonary disease

secondary to long-term cigarette smoking. The patient spoke quite easily about his grief over the loss of his marriage and the loss of his mother; he felt that his general health had become suppressed from these two events and that these had played as much a role in the onset of his asthma as had his exposure to wood dust in his workshop.

Past Medical History

The patient's past medical history was remarkably unremarkable.

Past Surgical History

Past surgical history was unremarkable.

Social History

Social habits were unremarkable. The patient did not smoke. He did not use alcohol to any extent. He was not on any special diets. He had, however, become very interested in studying the world's religions over the last several years and was currently involved in some counseling to help him deal with his grief. He spoke about this with a great deal of interest, and I thought at the time that this may, in fact, be a significant element in his getting well over a period of time.

Allergies

No history of allergies.

Medication

No other medications other than the two mentioned previously, except for six to ten prescriptions of antibiotics per year for upper respiratory infections.

Physical Examination

The patient was approximately 6 feet 3 inches tall. Weighed 187 pounds. He had a good gait. Good posture and good eye contact during the examination. The patient's general postural exam on standing was essentially unremarkable. Supine examination was done in somewhat greater detail. Other than looking for major structural aberrations, the patient was studied in detail in the supine position for specific somatic dysfunctions. The patient's cranial arrhythmic impulse was 4 per minute, amplitude was poor, the quality was poor. The inherent motility of the central nervous system was symmetrically balanced but the excursion, I would say, was probably only 70 percent of what I would expect in a young healthy male. The mobility of the reciprocal tension membrane was severely limited and the tentorium cerebelli was not moving and was held in a hyper flexed position. The mobility of the cranial bones was symmetrically diminished. The longitudinal fluctuation of the cerebral

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spinal fluid was absent and the lateral fluctuation of the cerebral spinal fluid was present and somewhat increased in its amplitude. The upper cervical area showed a general reduction in inherent mobility, but nothing that would suggest any focal or somatic dysfunction and appeared to be secondary muscular strains due to the straining of secondary respiration.

Examination of the thoracic spine and the thorax revealed there was no symmetrical motion within the claviculars during the inhalation phase of the primary respiratory mechanism. The examination also revealed there was extremely limited motion of the rib cage. The ribs are being held in inhalation, with some respiratory excursion but only minimal. My initial impression of this particular part of the structural examination was that intercostal muscles were spastic and excessively tense. The remaining evaluation of the thoracic spine showed a general decrease in motion with a general paravertebral spasm. Auscultations of the lungs revealed that the patient had a minimal amount of wheezing, but he had just taken his medication prior to my examination. The patient's ENT examination showed some engorgement of the mucus membranes of the upper respiratory tree but was essentially unremarkable for any gross pathology.

Examination of the lower thoracic spine and the lumbar spine and examination of the diaphragmatic movement showed that the patient had very very little, if any, abdominal respiration. Most of his respiratory action was thoracic in nature. The patient was holding his abdominal musculature very tensely and was not relaxed in his respiration. This I found interesting because the patient was not in the extreme grips of his asthma at the time of the examination, yet, he was unable to relax the visceral somatic overload on his system. There was no involuntary motion of the sacrum. There was no involuntary

motion of the innominate bones during the inhalation period of the respiratory mechanism, and there was no movement of the pelvic diaphragm in synchrony with the thoracic diaphragm.

Initial Assessment

My initial impression was that the patient probably had a psychosomatic component to his asthma. That the loss of his wife and his mother, his two primary relationships, left the patient debilitated psychologically. At that point, he was unable to understand his feelings and started to close himself off emotionally which resulted in the asthma.

I also feel that the exposure to the wood dust probably stressed his immune system in this area enough so that he developed a decreased physiological response in the mucus membranes of his lungs. Obviously, the patient was not getting better and even though he was taking medication, antibiotics had not worked as effectively as before. It was obvious that his disease pattern was showing a poor prognosis even with the evolution of only two years of time.

I also felt that the patient's asthma was primarily a neuroendocrine immune disorder and that he responded to osteopathic treatment. I told the patient, at that point, that I would like to give him three treatments and then reassess the general functioning of his system as I had just done, to see if, in fact, it would be able to help his situation.

Treatment Plan

Treatment plan was to give him osteopathic treatment to decrease the amount of sympathetic overload in his system both from the visceral and the psychological, as well as release somatic function. My plan was to encourage him to continue his reading and his counseling and to get to know as much as he could about him-

self emotionally and about his feelings, and begin to try and relax into a more compassionate state of understanding toward the amount of stress that he had been through in his life.

Course of Treatment

I began the treatment with a CV-4. It took approximately 15 minutes. It did show some response in that the longitudinal fluctuation of the cerebral spinal fluid became much more active. There seemed to be a very good amplitude to the longitudinal fluctuation after the CV-4 and with the increase in this fluctuation throughout the posterior, medial and anterior cranial fossas. There was a change in the amplitude of the inherent motility of the central nervous system, as well as a softening of the inertia in the reciprocal tension membrane but, at that point, there was no change in the movement of the reciprocal tension membrane.

Following the CV-4, I applied a base spread across the base of the cranium in order to try and increase the amplitude of the longitudinal fluctuation to its maximum, to study the response of the reciprocal tension membrane and the general function of the cranial mechanism. The base spread took approximately four minutes. There was a widening of the transverse diameter during the swelling phase which did give some motion to the reciprocal tension membrane, but it did not reestablish any significant amount of motion.

Following this, I did a temporal lift, a frontal lift, a parietal lift and some cervical traction, trying to decompress the amount of inertia in the reciprocal tension membrane. Following these procedures, there was a definite change in the reciprocal tension membrane but, again, the hyperflexion of the tentorium was not yielding to treatment. Following these procedures, I decided to take the tentorium cerebelli into extension and

using a direct action technique, held it in that position to see if the reciprocal tension membrane would not resolve its intrinsic inertia. This procedure was done successfully.

Following this, I did a lot of soft tissue to both the anterior, lateral and posterior areas of the thorax. I created as much fascial relaxation and lymphatic stimulation as possible doing soft tissue technique.

Following this and using balanced ligamentous articular tension, I treated the diaphragm both in the thoracic and pelvic area, and followed those treatments with a balanced membranous tension technique on the sacrum which restored its motion.

Following the restoration of motion in the sacrum, I reevaluated the cranium. At that time, it was evident that the reciprocal tension membrane was really making an effort to move. It almost felt like the membrane was idling. It was quite a strange sensation, but very evident.

Following this observation, I decided to try and use the direct action technique of taking the tentorium cerebelli into extension and was successful after about two minutes.

Following this, the patient became extraordinarily quiet and stated that he felt very relieved and there was a stillness not only within the patient's mechanism, but within the general area of the treatment room.

Following the stillness which heralded the completion of the treatment, I spoke with the patient briefly and asked him if he would reschedule an appointment with me in approximately 4 weeks. My timing of this at 4 weeks was simply because the treatment had been so dramatic. I figured that the patient needed time to integrate and allow his system to accept and integrate the changes that had come forth. The patient returned to my office 31 days later and, at that point, he said that he was doing quite well. He said that he had seen an al-

lergic and had tested negative for all antigen antibody reactions. He had been reducing his medications since our office visit and slowly got to the point where he was able to discontinue both the azmacort and the alupent.

The patient did state, however, that even though he had not taken these on a regular basis that several times a week he did need to take a single dose of medication. His morning mucus production had slowly declined to the point now where it was quite normal and he did not have a cough. He was exercising without asthma. The reading and counseling had helped him significantly. His self-esteem levels were much improved. At this point, I reevaluated his entire mechanism from his cranium down to his sacrum.

He had an overall 80 percent improvement in the findings that we had discussed earlier. However, he was showing some inertia in his reciprocal tension membrane. It was not hyper flexed any longer. He still had some residual restrictions in the thoracic cage and there was no restriction in the anterior abdominal musculature. The patient's abdominal breathing pattern was quite well. I commented to the patient about the change in his breathing, and he said that having spoken with me earlier about his breathing had helped him to relax this particular area.

I treated the patient again and resolved the minor somatic dysfunction that I was able to find. I told him to return to my office for a follow-up in approximately 6 to 8 weeks.

The patient's follow-up examination was unremarkable. He said he felt quite well and if he needed any more further medical care he would be anxious to contact me, but at the present time he was doing quite well.

Discussion

Obviously, the patient had a psychosomatic, viscerosomatic and a

somatovisceral inner play that contributed to his asthma. I think he had a disease process which involved the whole patient, not just his lungs, and that by treating the whole patient and restoring the function of his neuroendocrine immune system through the use of cranial osteopathic techniques, the patient did quite well. I also feel that the soft tissue work on the patient's thorax helped to remove a tremendous amount of resistance to good venous arterial, lymphatic and neurotrophic flow to the thorax, and this played a significant role in the decrease of the patient's mucus production.

Obviously, balancing the patient's cranial, thoracic and pelvic diaphragms is of major importance to the restoration of normal neurotrophic function.

The patient's most important change was the reestablishment of the longitudinal fluctuation of the cerebral spinal fluid. This is one of the main physiological events in the support of the neurotrophic functions of the central system both psychologically, neurologically and endocrinologically. The restoration of the longitudinal fluctuation was probably the key in terms of restoration of this problem. I do not feel that without a complete understanding of osteopathy in the cranial field that this patient would have recovered as quickly or as dramatically. □

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From "Osteopathic Manipulative Procedure in Disorders of the Eye"

by A. Hollis Wolf, DO, FAAO – AAO Yearbook, 1970

Specific manipulative measures are directed to the eye and the orbit, themselves. Dr. Martin D. Young describes measures to "milk" congestion from these areas. They consist of stroking medialward over the eye, with lids closed, to move fluids in the normal direction. In order to stretch eye musculature, he recommends pressing the eye upward, downward, lateralward, and medialward—through closed eyelids, of course. He also describes a technique of grasping the eye through closed eyelids, and gently rolling it about in its orbit. These measures move fluids and stretch muscular attachments, thereby promoting good circulation and drainage.

A second principle consists of utilization of the so-called "balanced tension" technic. It consists of gently grasping the eye, through closed lids, and determining (by moving the eye superiorly, inferiorly, laterally, and medially) just where a point of balanced tension exists. The eye is held in this position, or even moved slightly, as tensions change. This latter principle was described in great detail by the late Dr. Harold Hoover, and he called it "Functional Technique." His articles on this subject appear in Academy Yearbooks, although I do not recall his mention of its application directly to an eye problem.

The third specific manipulative procedure, and the one which I feel is most specific and effective, consists of the application of Dr. Ruddy's "Resistive Duction" treatment to the musculature of the eye. This is made possible by the fact that the cornea bulges forward to produce a palpable bulge

against which one can direct a resistive force. Therefore, with the palms of the physician's index fingers placed above the cornea, he resists the patient's attempts to move the eyes downward, lateralward, medialward, as well as obliquely inferolaterally, inferomedially, supero-laterally, and superomedially, by placing fingers in such a manner to obstruct the path of intended motion. Normally, these procedures are given to a slow counting procedure—such as, "One! Two!" The pull lasts about one second, and the resting period about one second, alternately. Each attempt at motion is repeated about ten times in each plane. This is a useful approach whenever treating any area with the resistive duction method of Dr. Ruddy.

This "resistive duction" procedure releases tension in the muscles of the eye and permits better circulation and drainage via the ciliary system of blood vessels. Equally important, however, is the effect when one decreases the abnormal, stressful, tensions of the sclera. These distort the shape of the eye and produce tension upon all structures entering or leaving the eye; thereby, adversely affecting fluid movement and resulting in intraocular passive congestion and resultant increase in intraocular pressure. Other described procedures for manipulation to the eye similarly affect circulation and drainage.

Finally, "armed" with all these ideas, what sort of eye problems are we going to treat? Inflammatory conditions, regardless of where found in the body, are greatly helped in their resolution by attention to circulation

and drainage. Thus, considerable support for management of such problems as retinitis, iritis, choroiditis, or conjunctivitis will be found in manipulative treatment of the eye. For many years, Dr. Ruddy has favorably affected the resolution of early cataract of the lens so as to defer, or avoid, cataract surgery. Glaucoma is an obvious "candidate" for such management, and measurable decrease in intraocular tension can be expected. Surface phenomena, as corneal ulcer, pterygium, and pinguecula respond far more swiftly when this form of treatment is used. The pterygium or pinguecula will often disappear under this treatment, without the usual surgical removal or transplant procedure. Recurrent eyelid pathology is usually related to eye strain, and this fundamental approach should not be neglected. Eye muscle disorders, such as strabismus or even nystagmus, are indications for such treatment. This is not a treatise on cranial manipulative procedure, but it would be an extreme oversight not to mention its possibilities in normalizing the delicate nerve-reflex function. When one considers the anatomical relationships of the various foramina through which the eye is served, then he realizes the potential in cranial manipulative procedure.

In summary, then, I believe it is reasonable to apply the same principles of physiologic management of circulation and drainage to the eye as to other organs. I believe it is practical, feasible to learn or teach, and I know it is the most effective single measure one can employ in the field of eye problems. □

Case study: Use of the pedal lymphatic pump in a patient with restless legs syndrome

by Mark Ragucci MS-III, Kelly Swanson MS-III, and Eric Cook MS-III
Midwestern University - Chicago College of Osteopathic Medicine

Identification

The patient is a 53-year-old Caucasian female.

Chief Complaint

“Crawling sensations deep in my calf that keep me from sleeping.”

History of Present Illness

The patient reported these “crawling sensations” have been experienced “for as long as I can remember.” She reported that the sensations kept her awake most of the night. The sensations subsided with walking, but when she returned to bed, they reappeared in minutes. The symptoms usually occurred within a half hour of settling down. She estimated that she was able to sleep only two hours per night. The symptoms reappeared every night with equal intensity in both legs. The sensations were restricted to the patient’s calves, and she experienced cold feet but no pain or dullness in her legs.

Past Medical History

The patient reported a past medical history significant for osteoarthritis of the left knee.

Past Surgical History

The patient stated she had a cholecystectomy in 1994. She also stated she had a prosthetic replacement of the left stapes in 1987 secondary to deafness from multiple ear infections in childhood. She reported that in 1980, she had a hysterectomy, and segmental resection of the sigmoid colon secondary to endometrial seeding.

*“Crawling sensations
deep
in my calf
that keep me
from sleeping.”*

Family History

The patient reported that her mother died at age 79 of a cerebrovascular accident, and that her father died at age 67 of pneumonia. Her father was suspected of having restless legs syndrome. She reported having three living brothers; one with possible restless legs syndrome, all in good health, and one living sister in good health. She stated that she has a

positive family history of non-insulin dependent diabetes mellitus and hypertension.

Social History

The patient noted that she is a retail store owner who has been married for 30 years with two grown children in good health. She reported a 15 pack-year smoking history but quit in 1970. No ethanol or illicit drug use is reported.

Allergies

The patient reported allergies to sulfa drugs, aged cheeses, and fermented foods.

Medications

The patient reported taking Estrace one milligram per day.

Review of Systems

Review of systems was remarkable only for the chief complaint of bilateral nocturnal “crawling sensations” of the calves, and left knee pain.

Physical Examination

Vital signs at the time of physical examination were: Blood pressure 110/70, pulse 70, respirations 16, height 5’4”, and weight 165 pounds.

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Head, eyes, ears, nose, and throat examinations were unremarkable. Heart exam showed regular rate and rhythm with no extra sounds or murmur and apical impulse at fifth intercostal space midclavicular line. Chest and lungs were clear to percussion and auscultation in all fields. Her abdomen was soft and nontender with no palpable masses and no organomegaly. All extremities showed no cyanosis or clubbing. Left knee tenderness was noted with slight edema around the left patella. Pulses were full and symmetrical in all limbs. Deep tendon reflexes were intact in all limbs. Neurologically, the patient was intact. Osteopathic examination showed the patient to have well developed musculature, normal anterior-posterior curves, and level landmarks. She had full range of motion in the cervical, thoracic, lumbar, and sacral regions with no significant tissue texture changes or somatic dysfunction. The patient was noted to have a right anterior ileum which was refractory to treatment. No piriformis, psoas, or hamstring tension were present.

Initial Assessment

The above described history, symptoms and signs were consistent with a diagnosis of restless legs syndrome.¹

Treatment Plan

Manipulative treatment was planned focusing on the reduction of the uncomfortable sensations in the patient's lower legs and improving the quality of the patient's sleep. A lymphatic technique was chosen in order to improve lymphatic and venous flow in the patient's lower extremities and to decrease the buildup of metabolic waste products.

The pedal lymphatic pump is a technique which incorporates an oscillatory movement to enhance the

circulation fluids and mobilize tissues. This movement stretches fascia and soft tissue aiding venous and lymphatic flow. The procedure is performed as follows: With the patient in a supine position, the operator grasps the patient's feet and applies a superiorly directed force to hyperdorsiflex the feet. The force is applied rhythmically in a cycle of one to two oscillations per second for a period of five to ten minutes. The technique can also be performed by hyperplantarflexing the feet with a posteriorly-inferiorly directed force in the same cycle of one to two oscillations per second.²

*Manipulative treatment
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of the patient's sleep.*

The pedal lymphatic pump was taught to the patient's spouse to be performed nightly on the patient for at least five minutes before the patient was to retire. The patient was instructed to keep a sleep and symptomatology diary.

Course of Treatment

Prior to treatment, the patient stated that the nocturnal "crawling sensations" kept her awake most of the night. Walking caused the symptoms to subside but the sensations would return within minutes of returning to bed. If she could not fall asleep before the symptoms would reappear, she would attempt walking again. This cycle

would continue throughout the entire night. The sensations appeared every night with equal intensity in both legs. She estimated that she was able to get only two hours of sleep per night.

The pedal lymphatic pump was performed nightly with at least three minutes of dorsiflexion and at least two minutes of plantarflexion. Concurrent with treatment, the patient began to keep a sleep and symptomatology journal.

With this osteopathic treatment, the patient reported that her sleep time doubled from two to four hours per night, with complete disappearance of symptoms. If treatment was discontinued, the symptoms did not reappear for a few days. With reappearance of symptoms, the pedal lymphatic pump was resumed and the symptoms again resolved.

Discussion

Restless legs syndrome is a condition described as an aching discomfort or crawling sensation deep in the calves, as well as a need to move the legs while trying to fall asleep or during prolonged periods of inactivity. Symptoms are reported to be worse at night and this discomfort can only be relieved by walking or movement of the legs.³ The diagnosis of restless legs syndrome can be made by the subjective complaints described above. Because 80 percent of patients with restless legs syndrome have repetitive flexions of the hips, knees, and ankles, the diagnosis is further strengthened by a clinically measured periodic limb movement of sleep index of greater than five per hour of sleep.¹ Restless legs syndrome is found in 10 to 20 percent of patients with insomnia referred to sleep disorder clinics.⁴

The exact etiology of restless legs syndrome is unknown but most cases are idiopathic in nature. Conditions reported to be associated with restless legs syndrome include iron, folate or

vitamin B₁₂ deficiency; pregnancy; polyneuropathy such as in diabetes mellitus or chronic renal failure; chronic myelopathy; Parkinson's disease; partial gastrectomy; carcinoma; chronic obstructive pulmonary disease; peripheral embolism; venous insufficiency; and medications such as neuroleptics,⁷ lithium, tricyclic antidepressants,⁴ anticonvulsants, caffeine, or alcohol.⁴ There is also thought to be a genetic component to restless legs syndrome exhibiting an autosomal dominant inheritance pattern.⁵

The pathogenesis in restless legs syndrome is uncertain. It was proposed by Ekbom, who first described the condition, that restless legs syndrome could be a result of accumulation of metabolites in the legs as a result of vascular disease. Movement of the legs may relieve symptoms by increasing venous and lymphatic flow. This theory may explain the increased incidence of restless legs syndrome in pregnancy, peripheral embolism, and venous insufficiency.⁶ Ekbom's theory may also explain the response of restless legs syndrome to vasodilators such as clonidine⁴ and relief secondary to sclerotherapy for varicose veins.⁷

Restless legs syndrome may have a pathology related to defects in the inhibitory reticulospinal pathway in the central nervous system. This is based on the increased incidence of restless legs syndrome in Parkinson's disease,⁴ and the response of restless legs syndrome to medications such as dopaminergic agents,⁸ opioids,⁹ and benzodiazapines.¹⁰ It has also been proposed that the pathogenesis in restless legs syndrome is related to peripheral neuropathy such as in diabetes mellitus or chronic renal failure accounting for the comorbidity of restless legs syndrome with these conditions.⁴

Successful treatment for restless legs syndrome has included treatment

of the underlying condition such as iron supplementation in iron deficiency anemia¹¹ or sclerotherapy for treatment of saphenous varicose veins.⁷ All the above pharmacotherapies mentioned have been successful treatments, as well as carbamazepine,¹² and propranolol¹³ treatment regimens. Anecdotal reports also tell of potassium, magnesium, calcium, vitamin E, and vitamin C being beneficial in treating restless legs syndrome.

Anatomically, it is known that fascia is the support structure for lymphatic vessels. Fascia contraction and stretching, either active or passive, moves lymph unidirectionally towards the heart in large lymphatic vessels.¹⁴ This way, the lymphatic pedal pump moves lymph and metabolites out of congested tissues.²

The pedal lymphatic pump appears to have increased the sleep time and completely resolved symptoms of idiopathic restless legs syndrome in a suffering patient. This osteopathic manipulative technique may have provided a means of passively removing irritating metabolites from the legs of a suffering patient by mobilizing fluids to enhance venous and lymphatic drainage. This would be in support of Ekbom's stasis theory of the pathogenesis of restless legs syndrome,⁷ and the pedal lymphatic pump provides an easy to perform nonpharmacologic intervention.

Acknowledgments

The authors would like to thank Dr. Kenneth Nelson for help in preparation of this case study.

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Osteopathic research: A challenge to the specialist

by Anita W. Eisenhart, DO

A truth is like a machine made for a purpose. All parts must be in place, and power applied to suit, or that machine fails to perform the service for which it is designed, and the object is lost if this is not done.

Andrew T. Still wrote this in his autobiography. If this "truth" could be the knowledge about human structure and function that can be gained from clinical research, then we, the osteopathic profession, have our work cut out for us if we are to preserve our truths about the osteopathic philosophies and practices.

Are the life-long research efforts of a few clinicians trained in osteopathic manipulation enough? Of course, not. However, if our profession added a few clinicians in each specialty, perhaps this body of truths could grow enough to never be lost and to only flourish.

How many times have we heard our students say, ". . . osteopathic manipulation is great for the osteopathic specialist or the family practitioner, but I am going into surgery, or obstetrics, or emergency medicine. I would not need this in my practice." Our students are bright, they are inquisitive, they require scientific evidence for the material we teach. And they deserve it. We can not just tell them that osteopathic manipulation improves post-operative ileus. They need data. Hard statistics. And who could be better suited for a study on post-operative ileus than the surgeon?

Albert K. Kelso said in his Louisa Burns Memorial Lecture in 1981, "Although the needs of students, the profession and the public for evidence differ, it is my opinion that the trust or faith in evidence produced by clinicians will be more satisfying than evidence from fundamental research. Clinical research has the advantage of providing direct evidence on the contributions of osteopathic medical

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practice while fundamental research only provides additional evidence to support osteopathic theories."

As an emergency medicine resident at St. Barnabas Hospital/NYCOM, I just completed a pilot study funded by a Glaxo-Wellcome fellowship grant. I showed osteopathic manipulation to be efficacious in treating acute ankle sprains in the Emergency Department. This study was presented at the 1996 AOA

Research Conference and the 1996 fall meeting of the American College of Osteopathic Emergency Physicians (ACOEP). To my knowledge, this was the first osteopathic study ever presented to ACOEP. It was very well received and, perhaps, awoke a need for osteopathic research and teachings in emergency medicine.

I challenge residents and practitioners in all specialties to produce osteopathic research. I challenge obstetricians to show manipulation efficacious during pregnancy. I challenge ophthalmologists to read Louisa Burns' paper *How Osteopathic Lesions Affect Eye Tissue. Can ophthalmologists do osteopathic research?*

I challenge emergency physicians to produce outcomes research on manipulation of acute soft tissue injuries, asthma, noncardiogenic or pulmonary chest pain, CT-negative headaches, and torticollis.

I challenge gastroenterologists to read Louisa Burns' paper *Vertebral Lesions and Gastric Ulcers*. I challenge surgeons to read John Steadman Denslow's paper *Report of a Case: Acute Cholecystitis and Colitis*. Could there be an osteopathic research project in gall bladder disease?

Are there osteopathic techniques for draining sinusitis? Has it ever been shown to be efficacious in a clinical trial? A group of clinicians at the Philadelphia College of Osteopathic Medicine are researching this very topic in a clinical study. Is

there a role for osteopathic research in the field of otorhinolaryngology? Of course.

I challenge orthopedic surgeons, too, show that their post-operative joint-replacement patients do better if treated with osteopathic manipulation and physical therapy than with physical therapy alone. Perhaps their range of motion will be greater. Perhaps they will improve faster. Perhaps there will be less associated compensatory spinal dysfunctions.

Louisa Burns also wrote a paper, *The Effects of Bony Lesions on Behavior*. Could the field of osteopathic psychiatry produce osteopathic outcomes research?

Several Louisa Burns Memorial Lectures have addressed the need for clinical research. Anthony G. Chila said, "Basic research is the foundation for understanding the premise of osteopathic philosophy. In order to

avoid a serious intellectual vacuum, widespread and large-scale integrated activity involving basic researchers and osteopathic clinicians is sorely needed." When he speaks of "widespread and large-scale" research, perhaps research by several disciplines within the field of osteopathy is required.

I ask many questions. Many unanswered questions. There is clearly a void in osteopathic outcomes research in the specialties. Perhaps in the future, we can answer some of these now rhetorical questions with scientific data.

My challenge lies not only on the shoulders of the specialists. I challenge those in osteopathic academia to inspire and work with specialists to produce osteopathic outcomes research in all disciplines of medicine. Together, we can show these osteopathic truths and make them a part of standard osteopathic literature

for medical students and clinicians to study and practice for generations. Andrew T. Still also said, "We often speak of truth. We say great truths, and use many other qualifying expressions. But no one truth is greater than any other truth. Each has a sphere of usefulness peculiar to itself. Thus, we should treat with respect and reverence all truths, great and small. A truth is the complete work of Nature, which can only be demonstrated by the vital principle belonging to that class of truths. Each truth or division as we see it, can only be made known to us by the self-evident fact, which this truth is able to demonstrate by its action."

[Editor's Note: Dr. Eisenhart is a 1994 graduate of PCOM and is currently an emergency medicine resident at St. Barnabas Hospital in New York.] □

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Conflicting Visions

by Edward G. Stiles, DO, FAAO

Editor's Note: *Below are corrections to be made in the Conflicting Visions article published in the December 1996 issue of The AAO Journal beginning on page 9. A copy of the revised article can be obtained from the AAO upon request. Our apologies to Dr. Stiles.*

Page 12, 2nd Column, last paragraph, beginning at 2nd sentence

The limbic system also neurologically can impact on the hypothalamus, and therefore the autonomic systems can impact on the hypothalamus, and therefore the autonomic systems, plus the pituitary and endocrine organs. Pain modulation can also be altered by the limbic system. Some feel the limbic system is also the region that stores abusive and traumatic memories. This region is thought to be the area where we appraise new situations as to whether they are safe or threatening.

Page 31, 1st column, 2nd paragraph, 1st sentence

I hypothesize that the memories stored in the limbic system are often ineffectively resolved and reconciled by an understanding of the circumstances surrounding the abusive or non-nurturing events.

Page 31, 2nd column, last sentence in first paragraph

These statements by *the medical giants Cannon and Osler*, help to *expand our vision of our osteopathic potential* as well as appreciate Korr's statement that we have the potential of *impacting the total nervous system when we provide comprehensive osteopathic care.*

Page 31, 3rd column, 2nd paragraph, 1st sentence

Davidoff, a neurologist at the University of Miami and publishing in the *Journal, Neurology*, in May 1992, made some interesting observations. His article was entitled, *Skeletal*

Muscle Tone and the Misunderstood Stretch Reflex. In that article, he emphasized the fact that myotatic reflex discussions are based on data from the Sherrington research model. Unfortunately, our understanding was limited because decerebrate animals were utilized.

Page 32, 1st paragraph, last sentence

Remember this represents only one Renshaw cell. Through this system alone, both the alpha and gamma motor neurons can be influenced by supraspinal centers, including the limbic system.

Page 33, 2nd paragraph, 1st sentence

Thus during the 80s and 90s, our vision and understanding of the neurophysiology of the cord, stress, the limbic system and its impact on the hypothalamus, autonomic nervous system, pituitary and endocrine organs, we well as, the afferent impact on the cerebellum and cerebral cortex expanded and matured.

In Memoriam

James A. Keller, DO

AAO member James A. Keller, DO, of Kirksville Missouri died on July 13. He was 89.

A native of Weiser, Idaho, he graduated from Kirksville College of Osteopathy and Surgery in 1932. He practiced four years in Butte, Montana, and 10 years in Jennings, Louisiana, after completing his internship at Laughlin Osteopathic Hospital in Kirksville. Dr. Keller joined the faculty at KCOM in 1948

retiring in 1976. He held the title of emeritus professor of osteopathic technique at KCOM at the time of his death.

An honorary life member of the American Academy of Osteopathy, Dr. Keller was the recipient of the Kirksville Osteopathic Alumni Association Living Tribute Award in 1982. Certified in rehabilitation medicine, his professional affiliations

included the American Osteopathic Association, the American Osteopathic College of Rehabilitation Medicine, the Missouri Association of Osteopathic Physicians and Surgeons, and the Northeast Missouri Association of Osteopathic Physicians and Surgeons.

Dr. Keller is survived by his wife, the former Jean Evans Lowe, and a son, James A. Keller, Jr. □

Letters to the Editor

continued from page 26

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- 1) Nemon BM: Osteopathic Medical Profession: Who are we & where are we going? The AAO Journal, Vol. 7, No. 1, Spring 1997
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- 3) Warner MJ, Mertz JA, Zimmerman AS: The Hysteresis Loop as a Model for Low Back Motion Analysis, JAOA, September 1997
- 4) The Collected Papers of Irvin M. Korr, American Academy of Osteopathy, 1979
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Dear Sir:

I am writing you about the Carpal Tunnel article appearing in the Spring 1997 issue of *The Journal of the American Academy of Osteopathy*. This exceptional article, appearing in the student's corner and well-written by Kelly Miller, shows great thought and appreciation for the relevant anatomy involving osteopathic Carpal Tunnel Syndrome treatment. Ms. Kelly rightly notes that releasing tension of the flexor retinaculum enlarges the carpal tunnel and helps remove pressure (compression neuropathy) of the Median Nerve. The home exercises reviewed here and others developed by Ben Sucher, DO, offer great relief to Carpal Tunnel Syndrome sufferers.

I wish to add one other anatomical aspect of CTS etiology and describe a brief treatment that has helped my CTS patients. Of course, this aspect follows upon proper medical diagnostic evaluation and osteopathic treatment of the patient's general and specific musculoskeletal strains and appropriate areas of somatic dysfunction.

The treatment, then, focuses around the capitate as "troublemaker." When the entire capitate bone translates toward the palmer surface or when the capitate body, rotating about the capitate's short transverse axis, moves toward the palmer surface, carpal tunnel stress ensues. The capitate's malposition with the carpal tunnel makes it a "space occupying lesion." The malpositioned capitate compresses the deep flexor tendons (flexor digitorum profundus) against the superficial flexor tendons (flexor digitorum superficialis). The whole tendon mass, then, pushes against the median nerve, superficial to them. The median nerve, the softest and most vulnerable of the prior structures, now becomes compressed, the median nerve complains, producing those familiar Carpal Tunnel Syndrome symptoms of which our patients complain.

Following this anatomical reasoning so far, it is now time to do something about our "carpal tunnel troublemaker" – diagnosis and treatment. A malpositioned capitate may be easily diagnosed as an unusual depression by comparing normal and CTS symptomatic patients. After a while, the differences between normal and abnormal depth, tissue elasticity, texture changes, and resiliency, not to mention motion, (somatic dysfunction) become immediately apparent.

Treatment consists of simply analyzing the bony mal-alignment and correcting it with whatever manipulative paradigm works best for you. A technique that I have found helpful follows:

1. Place an index finger on the dorsum of the wrist on the distal end of capitate body and the thumb of the same hand on the capitate body, palmer surface. That is, the distal end of capitate body is held between the thumb and index finger.
2. With the free hand, hold the distal phalanges of the second, third, and fourth digits. Apply traction, localizing your tension to the capitate carpal joints just distal to your capitate hand-hold.
3. With a direct or indirect action maneuver, reposition (translate, de-rotate, de-twist) the capitate to its proper or more proper anatomical relationship.
4. Now, that the capitate is in its more normal anatomical relationship, check to see if the "depression" at the base of the third metacarpal has "filled in."
5. Finally, normalize, if necessary, the relationship between capitate and lunate.

I hope these few osteopathic thoughts add a few more percentage points to our reader's Carpal Tunnel Syndrome successes. I thank Ms. Kelly for her well-written and well-researched article.

Stephen M. Davidson, DO
Phoenix, AZ



1997 AOA/AAO Convention

San Antonio, Texas

October 20, 22, 1997

Claudia L. McCarty, DO, AAO Program Chairperson

“Research 101”

Monday, October 20, 1997

8:00 am AOA Opening Session - Keynote Speaker
9:00 am Welcome: Claudia L. McCarty, DO
Program Chairperson
9:15 am Research in the Profession
Howard Levine, DO
9:30 am Opportunities for Osteopathic Physicians
in Clinical Research
David Baron, DO
10:30 am Examples of Current Clinical Research
Otitis Media
Karen Steele, DO, FAAO
11:00 am Examples of Current Clinical Research
Carpal Tunnel Syndrome
Benjamin Sucher, DO
11:30 am Clinical Research Opportunities
The Interface between Clinical and Basic
Science Research
12:30 pm Pharmaceutical Update and Exhibits
1:15 pm Alumni Luncheons
2:30 pm Pharmaceutical Update and Exhibits
3:00 pm Workshop: Treatment of the Eustachian
Tube with Osteopathic Manipulation
Karen Steele, DO, FAAO
4:00 pm Workshop: Treatment of Carpal Tunnel
Syndrome with Osteopathic Manipulation
Benjamin Sucher, DO
5:00 pm Adjourn for the day

Tuesday, October 21, 1997

8:00 am Tools: Research Instruments, Samples
and Data Collection
Michael Kuchera, DO, FAAO

9:00 am How to Write a Research Proposal
Mary Banihashem, DO
11:00 am Pharmaceutical Update and Exhibits
12:00 pm Lunch
1:00 pm Workshop: Myofascial Release
Judith O'Connell, DO, FAAO
2:30 pm Workshop: Facilitated Positional Release
Eileen DiGiovanna, DO, FAAO
4:00 pm Workshop: Modification of OMM
Techniques
Charles Smutney, DO
5:00 pm Adjourn for the day

Wednesday, October 22, 1997

8:00 am Outcomes Research
James Lipton, DO, FAAO
9:00 am Research on an Emergency Room
Schedule
Theodore Geta, DO
10:00 am Grant Opportunities in Osteopathy:
Finding Dollars and Strategies for
Getting Them
Lynn Miner, PhD
11:00 am Northrup Memorial Lecture
Edna Lay, DO, FAAO
12:00 pm Lunch
1:00 pm Workshop: How to Write an Outline and
Develop a Protocol for Research
Charles Smutney, DO
David Yens, PhD
3:00 pm Workshop: Coding and Reimbursement
Judith O'Connell, DO, FAAO
5:00 pm Adjournment for AAO Program

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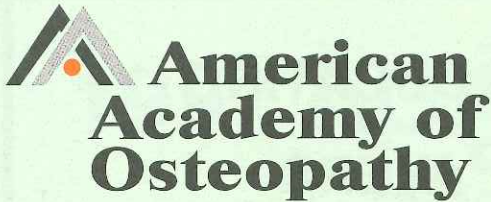


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By popular demand from AAO members, Editor Hollis King has assembled the works of Dr. Korr which have been published since the first volume appeared in 1979. Dr. King states in the book’s Foreword: “. . . Volume 2 contains the best collection of modern era statements on osteopathic medical philosophy and education, philosophy of science, and commentary on health care and the human condition in print. In fact, these papers of I.M.Korr make an excellent reference volume, complementary, and second in scope only to the recently published Foundations of Osteopathic Medicine. . . Together these two books contain primary resource documents relevant to the discussions and decisions by osteopathic physicians regarding their practice principles and fate of the profession.

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