What Would the Masters Have Taught Us From the Pandemic of 1918?

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12 March 2020
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Objectives

• Identify the historical impact of Osteopathy on the 1918 influenza pandemic
• Identify indications for OMT with respiratory infections
• Describe the regions that may benefit from OMT during respiratory infections
• BRIEF review of associated anatomy and the Autonomic Nervous System
• Demonstrate OMT techniques for both outpatients and inpatients
  • The predominant treatments included here are variations of the ones possibly utilized by DOs during the 1918 Spanish Flu (with a few additional)
Disclaimer

• We have no financial conflicts of interest
Seattle, Washington Policemen wearing masks made by the Red Cross Dec 1918

https://www.archives.gov/exhibits/influenza-epidemic/records-list.html
COVID-19 Update Resources

• CDC: Coronavirus Disease 2019 (COVID-19) Situation Summary – updated as information becomes available

• WHO: Updates on Coronavirus disease (COVID-19) outbreak
  • https://www.who.int/emergencies/diseases/novel-coronavirus-2019
Historical Facts from 1918

• The 1918 influenza pandemic was the most severe pandemic in recent history
• Caused by an H1N1 virus with genes of avian origin
• Exact origin was disputed; often attributed to beginning in Spain, thus the name the “Spanish Flu”
• Spread worldwide during 1918-1919
• In the United States, it was first identified in military personnel in spring 1918

https://www.cdc.gov/flu/pandemic-resources/1918-pandemic-h1n1.html

https://www.archives.gov/exhibits/influenza-epidemic/records-list.html
Historical Facts from 1918

• Mortality was high in specific age groups:
  • younger than 5 years old
  • 20-40 years old
  • 65 years and older

• Unique feature: high mortality in healthy people, including those in the 20-40 year age group – exact reason unknown

https://www.cdc.gov/flu/pandemic-resources/1918-pandemic-h1n1.html
Historical Facts from 1918

• Worldwide control efforts limited to non-pharmaceutical interventions due to no influenza vaccines and no antibiotics to treat secondary bacterial infections
  • Conventional interventions were applied unevenly: Isolation, quarantine, good personal hygiene, use of disinfectants, and limitations of public gatherings

 https://www.cdc.gov/flu/pandemic-resources/1918-pandemic-h1n1.html

• The cities that enacted non-pharmaceutical interventions early and kept them in place throughout the pandemic saw death rates approximately 50% lower than those cities that did not enact such measures.
## 1918 vs. 2020 Population

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1918</strong></td>
<td>1,500,000,000</td>
<td>500 million</td>
<td>50 million</td>
<td>675,000</td>
</tr>
<tr>
<td><strong>2020</strong> (as of 11 March)</td>
<td>~ 7,770,000,000</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
</tr>
</tbody>
</table>


[https://www.worldometers.info/world-population/](https://www.worldometers.info/world-population/)
DOs Made the Difference
1918 H1N1 Virus Influenza Pandemic

The known data regarding the success of DOs treating influenza were gathered from the 1918 Spanish influenza pandemic and was first presented by R. Kendric Smith, MD, in a paper in which he described the "osteopathic conquest of disease in which medicine has failed".

<table>
<thead>
<tr>
<th>Records collected from 2445 DOs</th>
<th>H1N1 Influenza Cases</th>
<th>% Mortality</th>
<th>Secondary Pneumonia Cases</th>
<th>% Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>110,120 patients</td>
<td>0.25%</td>
<td>6258 patients</td>
<td>10%</td>
<td></td>
</tr>
</tbody>
</table>

Standard Medical Care

<table>
<thead>
<tr>
<th></th>
<th>H1N1 Influenza Cases</th>
<th>% Mortality</th>
<th>Secondary Pneumonia Cases</th>
<th>% Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5-6%</td>
<td></td>
<td></td>
<td>~33% overall (as high as 68-78% in some large cities)</td>
</tr>
</tbody>
</table>

OMT Employed in the 1918 Pandemic

• There were no universally employed OMT treatments during the 1918 pandemic.
• A review of the literature reveals a commonality of approaches.
• OMT was applied to:
  1. Paraspinal muscles of the cervical, thoracic and lumbar spine (Sympathetic Nerve “Springing”)
  2. Thoracic inlet, including the scalene muscles, upper ribs and clavicle
  3. Rib cage
  4. (Note: Lymphatic pump techniques did not develop for another 10 years, but were employed in the treatment of yearly flu as early as 1928. Mention is made of vibrating the chest wall with the fingertips, however, which may have served a similar purpose.)

OMT Employed in the 1918 Pandemic

• Treatments were provided with the patient in bed to avoid overexertion.
• The patient was treated in sitting or lying position.
• As much as possible, the patient would be kept covered with clothing and blankets during treatment to avoid chilling.
• Treatment duration was 10 minutes or less, so as not to exhaust the patient.
• Treatment would be vigorous and thorough at the onset of symptoms, but afterwards would be applied much more gently.
• Treatments would be provided up to three times a day on day one, and two times a day thereafter.

<table>
<thead>
<tr>
<th>Authors</th>
<th>Region /Technique</th>
<th>Outcomes</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whiting; Lane; Castilio &amp; Ferris-Swift</td>
<td>Liver &amp; Splenic Pumps</td>
<td>↑ WBC  ↓ RBC</td>
<td>Alternating compressions, 1.5-5 minutes, 21 compressions/min</td>
</tr>
<tr>
<td>Measel; Measel &amp; Kafity</td>
<td>Lymphatic Pumps</td>
<td>↑ B-cell &amp; T-cell components</td>
<td></td>
</tr>
<tr>
<td>Mesina et. al.; Hampton et. al.</td>
<td>Lymphatic Pumps – Pectoral Traction &amp; Splenic Pump</td>
<td>“Significant basophilia”</td>
<td>“may play a significant role in initial immune response”</td>
</tr>
<tr>
<td>Slezynski &amp; Kelso</td>
<td>Thoracic Pump post cholecystectomy</td>
<td>Earlier recovery and quicker return to preoperative FVC</td>
<td>Atelectasis occurred in both groups. Control: Incentive spirometry</td>
</tr>
</tbody>
</table>

OMT – Adjunctive Treatment for Pneumonia

Osteopathic Manipulative Treatment (OMT) is a cost-effective adjunctive treatment of pneumonia that has been shown to reduce patients’ length of hospital stay, duration of intravenous antibiotics, and incidence of respiratory failure or death when compared to subjects who received conventional care alone. The use of manual manipulation techniques for pneumonia was first recorded as early as the Spanish influenza pandemic of 1918, when patients treated with standard medical care had an estimated mortality rate of 33%, compared to a 10% mortality rate in patients treated by osteopathic physicians. When applied to the management of pneumonia, manual manipulation techniques bolster lymphatic flow, respiratory function, and immunological defense by targeting anatomical structures involved in these systems.


https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4173698/
• **Breathing:** the movement of air in and out of the lungs for the purpose of exchanging carbon dioxide for oxygen within the blood.

• **Respiration:** The exchange of carbon dioxide for oxygen at the cellular level.

... any treatment that augments the local oxygen supply or helps to avoid hypoperfusion of the wound will tend to increase the rate of healing and decrease the susceptibility to infection.

Osteopathic manipulative treatment affects the pulmonary environment through somatosomatic and somatovisceral reflexes. It also affects the musculoskeletal mechanics involved in breathing, respiration and lymph flow.

<table>
<thead>
<tr>
<th>Symptom Comparison of Infectious Respiratory Diseases</th>
<th>COVID 19</th>
<th>Avian Flu [H5N1] 2003</th>
<th>Seasonal Flu</th>
<th>Upper Resp. Infection</th>
<th>Common Cold</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elevated temp</td>
<td>Yes</td>
<td>++++/+++++</td>
<td>++</td>
<td>++</td>
<td>+/-</td>
</tr>
<tr>
<td>Chills</td>
<td></td>
<td>+++</td>
<td>++++</td>
<td>+++</td>
<td>-</td>
</tr>
<tr>
<td>Cough</td>
<td>Yes</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
</tr>
<tr>
<td>Short of breath</td>
<td>Yes</td>
<td>++++</td>
<td>+/-</td>
<td>+/-</td>
<td>-</td>
</tr>
<tr>
<td>Chest discomfort</td>
<td></td>
<td>+++</td>
<td>++</td>
<td>++</td>
<td>+/-</td>
</tr>
<tr>
<td>Sore throat</td>
<td>+/-</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
<td>++</td>
</tr>
<tr>
<td>Vomiting/nausea</td>
<td>++</td>
<td>+</td>
<td>+</td>
<td>+/-</td>
<td>-</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>++</td>
<td>+</td>
<td>+/-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>CNS</td>
<td>++</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Malaise/fatigue</td>
<td>+++</td>
<td>+++</td>
<td>+</td>
<td>+/</td>
<td>+/-</td>
</tr>
<tr>
<td>Runny nose</td>
<td>+/-</td>
<td>+</td>
<td>++</td>
<td>+++</td>
<td></td>
</tr>
<tr>
<td>Headache/myalgia</td>
<td>+++</td>
<td>+++</td>
<td>++</td>
<td>+/</td>
<td></td>
</tr>
<tr>
<td>Young healthy at serious risk</td>
<td>+++</td>
<td>+/-</td>
<td>+/-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Elderly &amp; underlying conditions at serious risk</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Prevention Measures in a Pandemic

• Social distancing measures decrease contact between infected and non-infected individuals
  • Isolation, quarantine
  • Travel advisories and restrictions
  • School closures
  • Cancellation of mass gatherings

• Infection control practices decrease the likelihood of disease transmission between infected and non-infected individuals
  • Cough/sneeze etiquette (sneeze zone = 6-10ft)
  • Hand hygiene
  • Personal protective equipment
  • Infection control protocols
Treatment Considerations

• Begin with three treatments on Day 1
• Subsequent days – twice daily
• Limit treatments of the seriously ill to less than ten minutes

• Remember, during a pandemic, there will be insufficient DOs in the country to treat all who are ill; thus, this information needs to be shared extensively.
  • Consider teaching these OMT techniques to all physicians and any other medical personnel who are willing to learn and utilize them when treating the ill
  • Consider teaching these OMT techniques to family members of those who are ill so that they may be continued at home
• Home treatments allow more patients to be treated more frequently and limit “breaking” isolation
Opportunities for Treatment
Four Tenets of Osteopathic Medicine

❖ The body is a unit: body, mind and spirit
❖ The body possesses self-regulatory mechanisms that are self-healing in nature
❖ Structure and function are reciprocally interrelated
❖ Rational treatment is based on an understanding of body unity, self-regulatory mechanisms, and the inter-relationship of structure and function
Areas for OMT Consideration

- Upper thoracic vertebrae, ribs, sternum
- T1-5 – sympathetic innervation to the lungs
- OA joint & the course of the vagus n. – parasympathetic innervation of the lungs
- Accessory muscles of respiration (such as: scalene & sternocleidomastoid muscles)
- Anterior cervical fascia
- Thoracic diaphragm (C3-5 - phrenic n. comes from the cervical plexus/sympathetic. Mobility of the diaphragm influenced by the lower 6 ribs, L1-3(4) and the sternum – don’t forget the transversus thoracis muscle.)
- Chapman reflexes for the lungs, sinuses & adrenal glands
  - be sure to check these to see if they are involved
- The craniosacral mechanism

OMT

• Varies with individual needs and areas of Somatic Dysfunction (SD)

• Ensure good cervical, thoracic, and diaphragmatic motion

• OMT for mid-cervical SD decreases postoperative pulmonary and other complications and discomfort. Sleszynski and Kelso. *JAOA,*1993,834-45

• Osteopathic evaluation can assist in diagnosis via viscerosomatic changes & Chapman reflexes
Chapman Reflex Points

Adrenals
1” lateral and
2” superior to umbilicus
**HEENT**

- Conjunctivitis
- Otitis
- Pharyngitis
- Laryngitis
- Tonsillitis
- Hay fever
- Sinusitis

<table>
<thead>
<tr>
<th>Organ</th>
<th>Anterior</th>
<th>Posterior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Middle ear (Otitis media)</td>
<td>Superior to mid-clavicles (X with 1st rib)</td>
<td>C1 posterior rami</td>
</tr>
<tr>
<td>Nasal sinuses</td>
<td>Inferior to mid-clavicles (X with 1st rib)</td>
<td>C2 articular pillars</td>
</tr>
<tr>
<td>Sinuses</td>
<td>Superior to mid-2nd ribs</td>
<td>C2 articular pillars</td>
</tr>
<tr>
<td>Pharynx</td>
<td>Inferior to sternoclavicular joints</td>
<td>C2 articular pillars</td>
</tr>
<tr>
<td>Tonsils</td>
<td>Medial 1st intercostal spaces</td>
<td>C2 articular pillars</td>
</tr>
<tr>
<td>Tongue</td>
<td>Medial 2nd ribs</td>
<td>C2 articular pillars</td>
</tr>
<tr>
<td>Larynx</td>
<td>Superior to medial 2nd ribs</td>
<td>C2 articular pillars</td>
</tr>
<tr>
<td>Eye (retina &amp; conjunctiva)</td>
<td>Lateral aspect of humerus on the middle aspect of surgical humeral neck</td>
<td>Occipital bone, behind mastoid processes</td>
</tr>
<tr>
<td>Neck</td>
<td>Medial aspect of surgical humeral neck</td>
<td>C3-7 articular pillars</td>
</tr>
</tbody>
</table>
Respiratory

- Asthma
- Bronchitis
- Influenza
- Pneumonia

<table>
<thead>
<tr>
<th>Organ</th>
<th>Anterior</th>
<th>Posterior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bronchi (red)</td>
<td>Medial 2(^{nd}) intercostal spaces</td>
<td>T2</td>
</tr>
<tr>
<td>Upper Lung (yellow)</td>
<td>Medial 3(^{rd}) intercostal spaces</td>
<td>T3</td>
</tr>
<tr>
<td>Lower Lung (green)</td>
<td>Medial 4(^{th}) intercostal spaces</td>
<td>T4</td>
</tr>
</tbody>
</table>
Tissue Texture Abnormalities (TTA)  
Allopathic Translation

• Readily palpable in paravertebral soft tissues of spinal level that innervates the structure causing the reflex
• General visceral afferent neurons return to the spinal cord in the same nerves that carry efferent autonomic fibers
• Reflexes lateralize to paravertebral tissues on the same side as the visceral organ
• Patients often report pain at spinal levels where tissue findings occur
• Tissue texture abnormalities (TTA) and tissue texture pathology (TTP) from the reflex is the manifestation of visceral pathology, NOT a primary somatic dysfunction
Autonomic Innervation for the Lungs (Allopathic Info.)

**Structure**
- Bronchial smooth muscle
- Resp. epithelium

**Parasympathetic**
- Contracts
- # goblet cells
- w/ thin secretions

**Sympathetic**
- Relaxes *(deep breathing)*
- # goblet cells
- w/ thick secretions

**Treatment**
- Autonomic Nervous System Balancing
  - Suboccipital release / upper cervical soft tissue work *(vagus neural input)*
    - Vagus nerve
      - 90% afferent
      - 10% efferent
  - Anterior Longitudinal Ligament Release *(sympathetic neural input)*
  - Rib Raising
**Sympathetic Nervous System**

- T1 – T4: Head and neck
- T1 – T6: Heart
- T1 – T5: Respiratory/Lung
- T7 – T11: Body Wall
- T2 – T8: Upper Extremities
- T12 – L2: Lower Extremities

**T5 – T9: (Foregut Celiac Ganglion)**

- Distal esophagus
- Stomach – left
- Proximal Duodenum – right
- Liver – right
- Gall bladder - right
- Spleen – left
- Portions of Pancreas – left

**T10 – T11 (Midgut Superior Mesenteric Ganglion)**

- Distal Duodenum, Jejunum & Ileum
- Head of pancreas
- Ascending colon
- Proximal 2/3 of transverse colon
- (not part of midgut)
  - Ovaries
  - Testes
  - Adrenal glands
  - Kidneys

**T12 – L2 (Hindgut Inferior Mesenteric Ganglion)**

- Distal 1/3 of transverse colon
- Descending colon
- Sigmoid colon
- Rectum
- Anus
- (not part of hindgut)
  - Prostate
  - Uterus
  - Bladder
Parasympathetic Nervous System

- Cranial Nerves *
  - CN III (Oculomotor nerve)
    - Pupillary Constriction
  - CN VII (Facial nerve)
    - Lacrimal/Salivary Secretion
  - CN IX (Glossopharyngeal nerve)
    - Carotid body/sinus
      - Regulates blood pressure
      - Regulates blood concentrations of $O_2$ and $CO_2$

* Remember “1973”: CN X, IX, VII, III

- CN X (Vagus nerve)
  - Left Division
    - Innervation to AV node and
    - Terminates at the duodenum
  - Right Division
    - Innervation to the SA node
    - Terminates at the transverse colon

- Pelvic Splanchnics (S2-4)
  - Descending Colon
  - Sigmoid Colon
  - Pelvis
## Basic Autonomic Response - Review

<table>
<thead>
<tr>
<th>Organ</th>
<th>Parasympathetic Feed, Breed &amp; Rest</th>
<th>Sympathetic Fight or Flight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eyes</td>
<td>Pupillary constriction</td>
<td>Pupillary dilation</td>
</tr>
<tr>
<td>Salivary Glands</td>
<td>Secretory</td>
<td>Vasoconstriction</td>
</tr>
<tr>
<td>Lungs</td>
<td>Bronchoconstriction</td>
<td>Bronchodilation</td>
</tr>
<tr>
<td>Heart</td>
<td>Bradycardia</td>
<td>Tachycardia</td>
</tr>
<tr>
<td>Liver</td>
<td>Gluconeogenesis Stimulates Gallbladder</td>
<td>Glycogenolysis</td>
</tr>
<tr>
<td>GI</td>
<td>Stimulate digestion with increased peristalsis &amp; secretion</td>
<td>Inhibit digestions with decreased peristalsis &amp; secretion</td>
</tr>
<tr>
<td>Sweat Glands</td>
<td>Vasoconstriction</td>
<td>Secretory</td>
</tr>
<tr>
<td>Urinary Bladder</td>
<td>Constriction</td>
<td>Relaxation</td>
</tr>
<tr>
<td>Uterine Body/Cervix</td>
<td>Relaxation/Constriction</td>
<td>Constriction/Relaxation</td>
</tr>
</tbody>
</table>
Sympathetic Chain Ganglia (Allopathic Info. Cont.)

- Innervate viscera as well as skin, muscles, sweat glands, blood and lymphatic vessels.
- Efferent information feed back to the sympathetic chain ganglia, located just anterior to rib heads, posterior to the pleura.
- Afferent stimulation from muscles and skin enter spinal cord.
Thoracic Diaphragm (Allopathic Info. Cont.)
Lymphatic Drainage Techniques

Keys points to remember:

• The thoracic ducts should be opened first, so as to allow the newly mobilized lymph a drainage outlet.
• The right thoracic duct drains the right upper thoracic region, right broncho-mediastinal trunk, right upper extremity and the right side of the head.
• The left side drains the remainder of the body.
• Ideally lymphatic work begins at the thoracic duct, moves through the core, then proximally to distally through the limbs and then back and back proximally to the core.

“Open the valves, clean out the pipes, flush the fluid through the pipes”

– Eva Shay, DO
The Old Masters – What I learned

• Their treatments were fairly short, about 10 minutes but much more often than today
• Initially, it seemed very articulatory... but was much more focused on direct stretching of the fascia over a block of segments
• Starting at Ease and then 2-4 enlarging loops of motion into tissue Barrier/tightness/restriction, not gentle. “Authoritative Tai Chi”
• They were much better at treating anterior tissues, I call them Beauticians of the Fascia
- Lymphatics were not mentioned specifically as techniques, but it was more of wringing out a wet towel in a column of tissue.

- Dr. Willard’s lecture yesterday of the fascia forming tubes/columns surrounding neurovascular bundles and lymphatics was addressed in their treatments.

- Their key target was the first rib – thoracic outlet.

  - The key to world peace (COL Dombroski Baghdad ’06)
  - And treating a viral syndrome
The Old Masters – What I learned

So are we as a profession and as the AAO going to step forward or step back
Are we part of the solution? The Old Masters went boldly into the pandemic, can we?

Free 8 minute treatments for those that test positive!

8 minute treatment in the work shop this afternoon

Thanks to Dr. Crow and Dr. Vardy again for this great book!!!
Additional References

• Devine, WH, Professor, MWU/AZCOM, Director OMM Division, Chapman’s Reflexes and Viscero-Somatic (PowerPoint from ECOP)


• Kuchera M & Kuchera W, Osteopathic Considerations in Systemic Dysfunction, Revised 2nd ed. Columbus, OH: Original Works; 1994:33-52

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• www.TomShayPhotography.com