

LUNG ISSUES

RESEARCH PAPER – 500 hr.

For: K.Claffey

By: Sandra Leckie

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There are many ways to approach life and living. We can go on auto-pilot ignoring the impact our behaviours have on our health or we can be conscientious and try to keep our bodies and health in an optimal condition. A scientific approach to understanding the functioning of the body is only half the equation. Understanding the mind body connection fills out the remainder. There is no more basic function than breathing. As the Asthma Association claims, “When you can’t breathe, nothing else matters”.

Physiological view of breathing:

Leslie Kaminoff in Yoga Anatomy describes breathing as follows: “Breathing, the process of taking air into and expelling it from the lungs, is caused by a three-dimensional changing of shape in the thoracic and abdominal cavities.”

This interplay among the thoracic and abdominal cavities; the muscles of the respiratory diaphragm and the muscles of the chest and torso allow these muscles to increase and decrease the shape of the thoracic and abdominal cavities. This three-dimensional shape changing added to the knowledge of how air enters and leaves the body, changes our view of the effort needed to breathe easily.

ANATOMY OF THE LUNGS

The pulmonary system includes the nose, sinuses, trachea, and lungs. The lungs are situated in the chest (thoracic cavity) and are surrounded by pleural cavities and encased by the ribs. They are separated from each other by the heart and other structures such as the windpipe and the esophagus. The lungs occupy the space from the collar bones to the top of the respiratory diaphragm. The lung on the right side has 3 chambers and the lung on the left has two. The heart's placement requires the lung on the left side to be smaller. The pulmonary system has many functions, including but not limited to protecting the respiratory surfaces from dehydration, temperature changes and environmental variations. It also acts as a filter to remove impurities from the air before it reaches the alveoli. The trachea branches off to become the bronchi which in turn branches into bronchioles. At the end of these bronchioles are alveoli ducts and from these ducts are the alveoli. The alveoli resemble clusters of grapes. There are approximately 350 million alveoli per lung. Combined, they have a surface area of 60-80 square meters. They are microscopic membranous air sacs and are the functional units of respiration. Here is the site of gaseous exchange between the respiratory and circulatory systems. The blood-air barrier is composed of 1 epithelial cell, a basement membrane and one endothelial cell. The gas (oxygen/carbon dioxide) exchange

occurs across the walls of the alveoli. The oxygen is picked up by the blood and the waste product, carbon dioxide, is then deposited and returned for re-oxygenation by the heart. The lung has a matrix of tissue and fluid which supports this network of structures. 4.

Breathing is something the body does, unconsciously, day and night throughout our lives without us ever giving it a moment's notice. That is until something happens. There are numerous lung disorders which undermine our health. Lung issues should be of concern to us all because "to breathe is not merely a matter of survival but the ability to thrive. "

Here are just three of the more common diseases of the lungs.

- Asthma
- COPD
- IPF – idiopathic pulmonary fibrosis

ASTHMA

DESCRIPTION:

Asthma is a chronic allergic or inflammatory condition of the airways of the lungs. Asthma is a common condition appearing in 3million Canadians. During an attack, there is narrowing of the smooth muscle of the bronchioles with excess mucus production. There is usually a triggering event which sets off the cycle of an attack. Coughing, wheezing and shortness of

breath are the usual symptoms. The airways return to normal after the attack.

Common Medical Treatment:

There is no cure but the condition can be well controlled with medication such as bronchodilators, steroids and non-steroid inhalers, oral medications to reduce reaction to allergens, recognizing and minimizing the exposure to the triggers.

C.O.P.D.

DESCRIPTION:

COPD is the acronym for Chronic Obstructive Pulmonary Disease – a progressive, chronic, airway disease. Emphysema and chronic bronchitis are the underlying processes behind COPD. This is a smoking related lung disease characterized by permanent damage to the alveoli. Like asthma, COPD is a disease of the airways but unlike asthma the particulate matter in smoke creates permanent damage. The alveoli become enlarged and lose their surface tension. Like asthma, there is swelling, coughing, wheezing and mucus production. Unlike asthma, the damage is progressive and permanent. The breath issue with COPD is the inability to thoroughly exhale thus compromising the gas exchange in the blood. 714,000 Canadians have COPD.

Common Medical Treatment:

It is recommended to stop smoking. Oxygen therapy is often necessary. Exercise is recommended in moderation. Keeping in contact with your Doctor as symptoms change is important. It will be the 3rd leading cause of death in the world by 2020.

Idiopathic Pulmonary Fibrosis

DESCRIPTION:

Idiopathic pulmonary fibrosis is a subgroup of the larger group of serious fibrotic lung diseases. The term idiopathic refers to no known cause of the particular patient's disease. IPF is a progressive lung disease characterized by scar tissue which gradually replaces healthy lung tissue throughout the lung and around the alveoli and restricts their ability to perform gas exchange.

IPF is the most common of the 7 idiopathic interstitial pneumonias as listed by the American Thoracic Society/European Respiratory Society. Although no single cause can be identified with IPF, the current thinking is of an exposure to an inciting agent in a susceptible person leading to the initial alveolar epithelial damage. Abnormal healing of alveolar epithelial cells provoke the migration, proliferation and activation of mesenchymal cells with the formation of

fibroblastic/myofibroblastic foci, leading to the exaggerated accumulation of extracellular matrix with the irreversible destruction of the lung parenchyma.(1,2) The lungs gradually stiffen and shrink with this the progressive scarring. The scarring progresses from the outer edges of the lungs inward, eventually surrounding the alveoli. World wide incidence of IPF is 20/100,000 for males and 13/100,000 for females.

SIGNS AND SYMPTOMS

IPF is difficult to accurately diagnose. A thorough medical history must be taken including familial incidences, drug exposure, environmental exposures, occupational history, social history, medication history to ensure other causes of interstitial lung disease are ruled out.

There are major and minor (non-specific) criteria for the diagnosing of IPF. The minor criteria can include:

- Non-productive cough lasting longer than 3 months
- No phlegm (not an airway disorder)
- Otherwise unexplained dyspnea on exertion
- Gradual onset of minor criteria over 6 month period
- Age – usually 50 years or older (2/3 of patients are 60 yrs at time of diagnosis)
- Males are affected more often than females
- Bibasilar crackling on inhalation (Velcro crackles)
- Finger clubbing seen in 20-50% of patients

- Some patients have no symptoms

Major criteria are:

- Pulmonary function test showing restrictive impairment; reduced diffusing capacity for carbon dioxide
- HRCT – high resolution computed tomography chest scan
- Lung biopsy

The lung biopsy is the only definitive method to diagnose IPF. The observations of lung tissue changes as viewed by normal x-ray are present in many other of the Pulmonary and Idiopathic Fibrosis diseases. The HRCT scans are more sensitive and can identify the patterns of tissue change of IPF disease.

COMMON MEDICAL TREATMENTS

The only effective treatment is lung transplantation.

There have been many medication and combinations of medications but to date none have been effective in reversing or slowing the progression of the condition. Many of the drugs to date have side effects which have implications for other organ systems. For a list of drug therapies see the complete review on eMedicine Pulmonology.(2)

Patients use oxygen therapy to help improve blood saturation levels.

The prognosis is poor with a 3-5 year life expectancy after diagnosis, although individual constitutions will affect the survival time.

YOGIC POINT OF VIEW

Yogic view of breathing:

Breath. It is the defining moment of birth and the final act at the time of death. Generally, we do not connect the health of our bodies with the taking of breath.

Breathing affects all aspects of our body's workings: the respiratory, cardiovascular, neurological, gastrointestinal systems, muscular and psychic activity. It also has a general effect on our concentration, sleep patterns, memory and our energy levels.

As life becomes more challenging, we may notice a decline in our abilities to cope. Where did the energy of my youth go? Why am I still tired when I wake up? What happened to my stamina? Am I really just getting old? Stresses in this modern world are increasing on young and old alike. Yet, do we recognize how our breath has changed in response to our lives?

The western style medicine takes a narrower view of disease. Yoga and other Eastern medicines have long recognized the connection between emotions and disease states. This includes the emotional component to breathing diseases.

YOGIC REMEDIES

MUDRAS

Gertrude Hirschi in the book, *Mudras, Yoga in Your Hands* gives a very thorough description of mudras: their origins, meanings and uses. Throughout her book, she has examples of Mudras to enhance our connection with the Divine and to encourage us to help heal ourselves. Not only is there a detailed description of the hand/finger position with a picture, there is also a visualization and an affirmation to be used with each mudra. There are a few specifically for lung issues.

Bronchial Mudra

This Mudra explains that “people with respiratory problems often also suffer from inner loneliness, isolation, sexual problems and sadness”. Herschi goes on to explain how to go about healing these issues and gives the visualization and Affirmation with the prescription of times to perform. She has an added benefit of including an Herbal Remedy.

Asthma Mudra

In this mudra, Gertrude uses personal experience to guide us. She gives several tips on avoiding the triggers that may set off an asthma attack. Again she gives the generalization that people with asthma may have too much detachment from the surrounding world or may have difficulties with boundaries.

“Consequently, they feel themselves plagued by other people’s duties and problems.” Also included is the Herbal Remedy of Horehound and black cumin. The visualization is one to help recognize boundaries and how the breath will help that. The Affirmation is one of security and freedom.

Linga Mudra

This Mudra works to strengthen the immune system and would be useful for the winter season or anyone with a weakened immune system.

Mudras have much in common with the Chakra explanation of root causes of diseases.

CHAKRA FOCUS for understanding/healing lung conditions:

The Heart Chakra is the 4th of 7 and is located in the centre of the chest. Its physiological correlates are the heart, thymus gland, vascular system, respiratory system and the lungs. Its psychic ability is to connect, to be at one with, compassion and unconditional love. Psychological imbalances will create feelings of alienation, an inability to bond with another, self-destructive tendencies and even suicide. Imbalances of the Heart Chakra will surface in the body as lung and respiratory problems ie: Asthma. The age/stage of emotional development is between the ages of 4 and 7 years and deals with the issues of the right to be loved and the right to love. The positive

emotions of this Chakra are hope and happiness and the negative emotions are sadness and grief. Deficiencies in energy at this stage result in characteristics of: jealousy, feeling lonely, being critical and resentful; excesses in energy result in characteristics of: poor boundary setting, smothering, over-loving, and co-dependency. Healing these issues may result in the freeing of the breath and a reduction of symptoms. A Psycho-spiritual Therapeutic approach such as Healing the Inner Child may help the person to locate and deal with their past. 11

Chinese Medicine:

When considering the 5 Element theory in disease keep the Generating and Control Cycles in mind. Lungs are Metal and therefore foods which strengthen metal and foods which support it (Earth and Fire) would be beneficial. Pungent vegetables, almonds, brown rice and pears are all beneficial in reducing phlegm and mucus. 9

Evidence of Qigong has been discovered during archeological digs of China that dates back to 168 BCE. There are three different schools of Qigong: the martial, the medical and the spiritual. The medical practice of Qigong is said to be very helpful with strengthening the underlying subtle energy system. There are three essential components to Qigong: use of visualization/meditation, specific movement and breath.

Qigong exercises have proper posture to facilitate energy flow, proper breathing which calms the nervous system while providing the cells with more oxygen and guided intention to focus the mind on a specific goal. Qigong can be part of an overall approach to support the body's own healing response to those triggers which provoke the lung.

One such exercise is called Lung and Breathing Revitalizer: To increase the fuel for your body's cells

Another is Qigong Lung Detox and a third is Lung Qi Massage: To improve your Respiration and Immunity

According to the author of Heal Yourself with Qigong, these exercises are effective within a very short time. 8

Diet Recommendations:

As Asthma is often related to allergies, it is often recommended to try eliminating aggravating foods. Often, the first food to eliminate is Dairy. Dairy creates mucus. According to both Macrobiotic and the 5 Element Theory of Chinese Medicine, certain foods will strengthen and support the lungs. 9

COPD may have originally had some underlying emotional issues leading to tobacco addiction and some dietary changes may effect a change. A person's dosha may influence their dependence towards tobacco and a personalized plan of cleansing/detoxifying may help the individual stop smoking.

Since there is no identifiable cause of IPF there may be no dietary changes that will affect the outcome, although improvements to diet may improve the quality of life.

Asana Recommendations:

In a recent teleclass, Dr. Charlene Fell and her research assistant Erfon Jessa, described their research project with Susi Hatley. Dr. Fell designed the study, monitored and tested the patients while Susi and her partner developed a sequence of yoga asana to use with this select group of IPF patients. The complete study will be published soon. Patients with IPF are routinely cautioned against exercising. The questions posed at the outset of the study were: is yoga safe for this population; is it an activity that will be accepted by this population; is there an improvement in their exercise tolerance.

The small sample of patients included a wide range of disease progression with oxygen being used. Susi noticed a pattern of restricted movement in the ribs and tightness in the shoulders and hips. Her goal was to bring more space into the ribcage and utilize what space they did have.

The session would start on the floor with mild chest openers. Then the group would move to chairs to do the breathing exercises. Susi used Donna Farhi's book to choose the exercises. She used Viloma, Tarzan Breath (percussion on the ribcage) and Straw Breathing (with a straw for those who could

and visualization for those who were unable). She was careful not to use words that would create a forced breath. She found that reversing perspective of breath was useful. (instead of the usual way of thinking inhale/exhale she had them ignore the inhale and think exhale first) She continued with seated stretches of the chest in all directions and seated twists. The degree of challenge was determined by the amount of coughing of the participants. After the seated work she led the group in some standing and balance poses. Depending on the day and the health of the participants , the asana used were Tadasana, Tree, Chair pose, Warrior, Extended Side Angle, Eagle, Pyramid pose. All poses were modified as needed, and increased in challenge as the participants were able. As fascia and pleura were stretched there was coughing but by week 3 there was no coughing during Warrior III. To help keep the participants in the present, Susi used the meditative mantra of Just So with the inhales and exhales. She finished the sessions on the floor with a comfortable amount of elevation for Savasana.

Other asana to specifically support Asthma are: cobra, fish, camel, bow, bridge, pigeon / back bends in general.

Breath recommendations:

Generally, with lung conditions, any breath practice is helpful. Kapalhati, Bhramari, Puraka and Rechaka, Ujjayi and Antara

Kumbhaka all strengthen the breath. As well, Bahya Kumbhaka and Golden Thread work directly with the exhale which helps increase the carbon dioxide transfer.

In closing, be mindful and enjoy many more breaths.

Glossary

Idiopathic – no known cause

Interstitial – tissue between cells

Epithelial – refers to cells that line hollow organs and glands and those that make up the outer surface of the body, Epithelial cells help to protect or enclose organs. Most produce mucus or other secretions. Epithelial cells are arranged in single or multiple layers depending on the organ and location. (MedLine Plus Medical Encyclopedia)

Mesenchymal cells – cells that develop into connective tissue

Parenchyma – tissue characteristic of an organ

Pneumonia – an inflammatory state of the lungs

Dyspnea – shortness of breath

Bibasilar – bottom part of the lung

NOTES AND SOURCES

1. Medline Plus Medical Encyclopedia(web)
2. Review by emedicine.medscape.com/article/301226
3. Teleclass by Dr. Charlene Fell, Lung Specialist , Peter Lougheed Hospital, Calgary, Alberta; Research Assistant – Erfon Jessa and Susi Hatelty
4. Neil Pearson – course handouts
5. Donna Farhi – The Breathing Book
6. Leslie Kaminoff – Yoga Anatomy
7. Gertrude Herschi – Mudras, Yoga in your Hands
8. Suzanne B. Friedman- Heal Yourself with Qigong
9. Karen Claffey – Teacher trainer
10. Asthma Society of Canada – Asthma.ca
11. Stephane Bensoussan – Psycho-spiritual Therapy