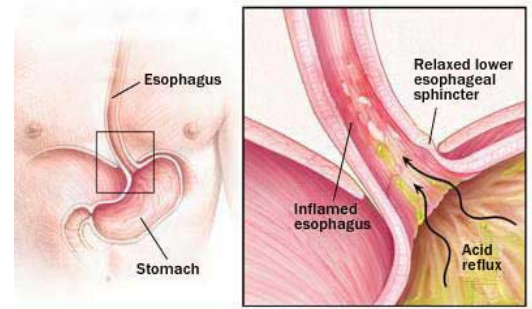


GERD: **Gastroesophageal Reflux Disease**
also known as “heartburn”, or just “reflux”

Symptoms: Typical symptoms include pain in the chest, bad taste in the mouth, or a feeling that liquid/food is coming up into the throat. Can also be associated with cough

Association with PF::

One study suggested 87% of IPF patients have GERD
Many – maybe most- IPF patients who were found to have GERD did not have the typical symptoms



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Complications caused:

Maybe makes the disease worse. The concern isn't the reflux itself but “aspiration” – inhaling acid into the lungs. Spilling acid into the lungs may injure the “epithelial” cells that line the lung, increasing the scar formation; scarring then can deform the esophagus, making it open more easily and worsening the reflux.

Some whole body diseases that cause pulmonary fibrosis (such as scleroderma) can also widen the esophagus, which may worsen scarring of the lungs

<http://www.mayoclinic.org/diseasesconditions/heartburn/multimedia/how-heartburn-and-gerd-occur/img-20007555>

Diagnosis:

pH study: small probe swallowed into the esophagus, records pH for 24 hours

barium swallow: swallow contrast, take an X ray and watch for the contrast to come up the esophagus

*sometimes watch the act of swallowing as well to look for “aspiration”

Treatments

“Lifestyle”: try to reduce the reflux by avoiding lying down after eating, elevating the head of your bed

Weight loss and elevating the head of the bed have shown benefit in reducing measured acid in clinical trials (see Kaltenbach article. Arch Intern Med. 2006)

Dietary changes don't help in clinical trials – though might help an individual

Chocolate seems to open the esophagus more, but no one has tested chocolate elimination!

Medications:

Antacids: calcium carbonate – make esophagus less acid, may help symptoms

Acid reducers:

H2 blockers” famotidine (Pepcid), ranitidine (Zantac), cimetidine (Tagamet) and nizatidine (Axid) – mostly over the counter, work quickly, not as strong as the PPIs

“Proton pump inhibitors (PPIs) omeprazole (Prilosec, Omeseq), lansoprazole (Prevacid), esomeprazole (Nexium), and omeprazole-sodium bicarbonate

Prescription only: rabeprazole (Aciphex), pantoprazole (Protonix), and dexlansoprazole (Dexilant, Kapidex) all reduce the acidity of the stomach

Alginic acid and a bicarbonate: (Gaviscon) float on pools of acid in the stomach — may be effective in treating symptoms, never tested in PF.

Surgery: Surgery can tighten the valve between the esophagus and the stomach, reducing the reflux. Ongoing study in the West Coast (through U Cal San Francisco) to see if surgery helps with pulmonary fibrosis:

Weighing Risks and Benefits of Laparoscopic Anti-Reflux Surgery in Patients With Idiopathic Pulmonary Fibrosis <https://clinicaltrials.gov/ct2/show/NCT01982968>

Obstructive Sleep Apnea

<http://www.nhlbi.nih.gov/health/health-topics/topics/sleepapnea>

Interruption in breathing from blockage of the airway

Symptoms: snoring, daytime sleepiness, morning headache

Association with PF:

Hard to be sure, but seems quite common, and often no symptoms

Estimates range 5-91%

Complications caused:

Daytime sleepiness, nighttime low oxygen levels (nocturnal hypoxemia)

Strain on right heart

Possibly associated with heart attacks, strokes

Diagnosis:

Overnight oxygen monitoring – overnight “oximetry”

Sleep study: Polysomnogram

May be done at home with a device you pick up and return

If on oxygen at night, need to have the study in a sleep lab (more information obtained in any case)

Measures how often you stop breathing (apnea) or slow down breathing enough that your oxygen falls (hypopnea)

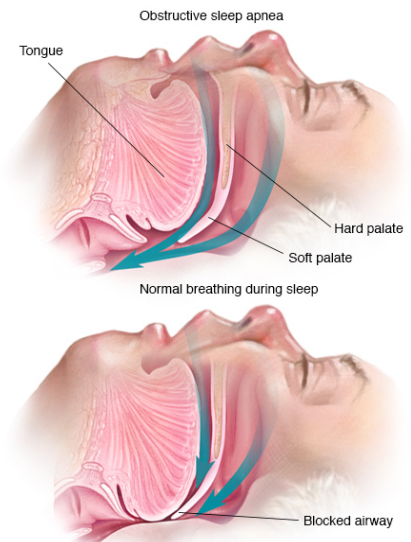
Gives an “Apnea Hypopnea Index: number of apneas+hypopneas per hour

Treatment

CPAP: Continuous Positive Airway Pressure

Dental devices and surgery don't work as well, though may have some role in certain types of apnea

Stick with it!



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<http://www.mayoclinic.org/diseases-conditions/obstructive-sleep-apnea/multimedia/obstructive-sleep-apnea/img-20007685>

Pulmonary Hypertension

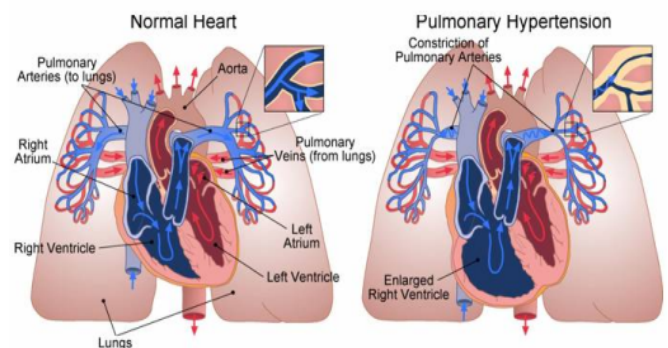
High blood pressure in the lungs

Association with PF:

Estimates range 10-50% depending on study, severity

May be caused by destruction of blood vessels from fibrosis or low oxygen levels

Some people seem to have more severe pulmonary hypertension; may be a distinct process



<http://www.pah-info.com/images/fullscreen/large6.jpg>

Complications caused:

Low oxygen level, shortness of breath, problems with right heart (“right heart failure”) swelling in the legs (edema)

Diagnosis

Ultrasound of the heart (echocardiogram)

Good for looking at right heart function, but may over or underestimate

Right heart catheterization – small probe directly into the right side of the heart – provides the best measurements of pulmonary pressures, and can also estimate the function of the left side of the heart

Video at the NHLBI website: <http://www.nlm.nih.gov/health/health-topics/topics/cath/during>

Treatment:

Keep oxygen level over 90%

(as we discussed, “hypoxic vasoconstriction” – low oxygen causing tightening of the blood vessels – typically occurs with an oxygen level <90, so we think avoiding low oxygen may help the hypertension.

But the trials that demonstrated a survival benefit in long term oxygen use were done in COPD patients with severely low oxygen; those studies also suggest improved quality of life and clearer thinking. We extrapolate to PF)

Treat sleep apnea

Unclear if medications work for the pulmonary hypertension associated with PF

Phosphodiesterase (PDE5) inhibitor. Sildenafil (Revatio), tadalafil (Adcirca)
seem safe, don't seem to help fibrosis, may or may not help the PH

Endothelin inhibitors

Bosentan – tested for PFI didn't slow progression, seemed safe

Ambrisentan (more specific drug) – seemed to make fibrosis worse.

References

(an incomplete list; feel free to contact me directly for more articles on a specific topic)

Useful websites:

<http://www.mayoclinic.org/diseases-conditions/gerd/basics/definition/con-20025201>

(I like the Mayo clinic site for basic definitions and illustrations of health conditions)

<http://www.nlm.nih.gov/health/health-topics> - has information about procedures and conditions related to the heart and lungs

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