COPD: Clinical Findings

Chronic Obstructive Pulmonary Disease (COPD)

Lung tissue damage → If occurring around airways → Airflow obstruction → ↑ mucus production

↓ elastic recoil to push air out of lungs on expiration

Total expiration time takes longer than normal
Lungs don’t fully empty, air is trapped in alveoli (lung hyperinflation)

↑ lung volume means diaphragm is tonically contracted (flatter)

Prolonged expiration

Diaphragm can’t flatten much further to generate deep breaths
To breathe, chest wall must expand out more

Breathes are rapid & shallow
Barrel chest

If end-stage: diaphragm will be “flat”. Continued inspiratory effort further contracts diaphragm → pull the lower chest wall inwards

Hoover’s sign
(paradoxical shrinking of lower chest during inspiration)

During expiration, positive pleural pressure squeezes on airways → ↑ obstruction

More effort needed to ventilate larger lungs
Respiratory muscles must work harder to breathe

Dyspnea
Shortness of breath, especially on exertion

Exhilaratory Wheeze

Fatigue; ↓ exercise tolerance

If end-stage:
Patient tries to expire against higher mouth air pressure, forcing airways to open wider

Pursed-lip breathing

Muscle weakness & wasting

Tripod sitting position
(activates pectoral muscles)

Neck (SCM, scalene) muscles contracted

↓ ventilation of alveoli

↓ oxygenation of blood (hypoxemia)

↓ perfusion of body tissues (i.e. brain, muscle)

Chronic cough with sputum

↓ number of epithelial ciliated cells to clear away the mucus (the cells have been killed by airway inflammation)

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Legend: Pathophysiology, Mechanism, Sign/Symptom/Lab Finding, Complications

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