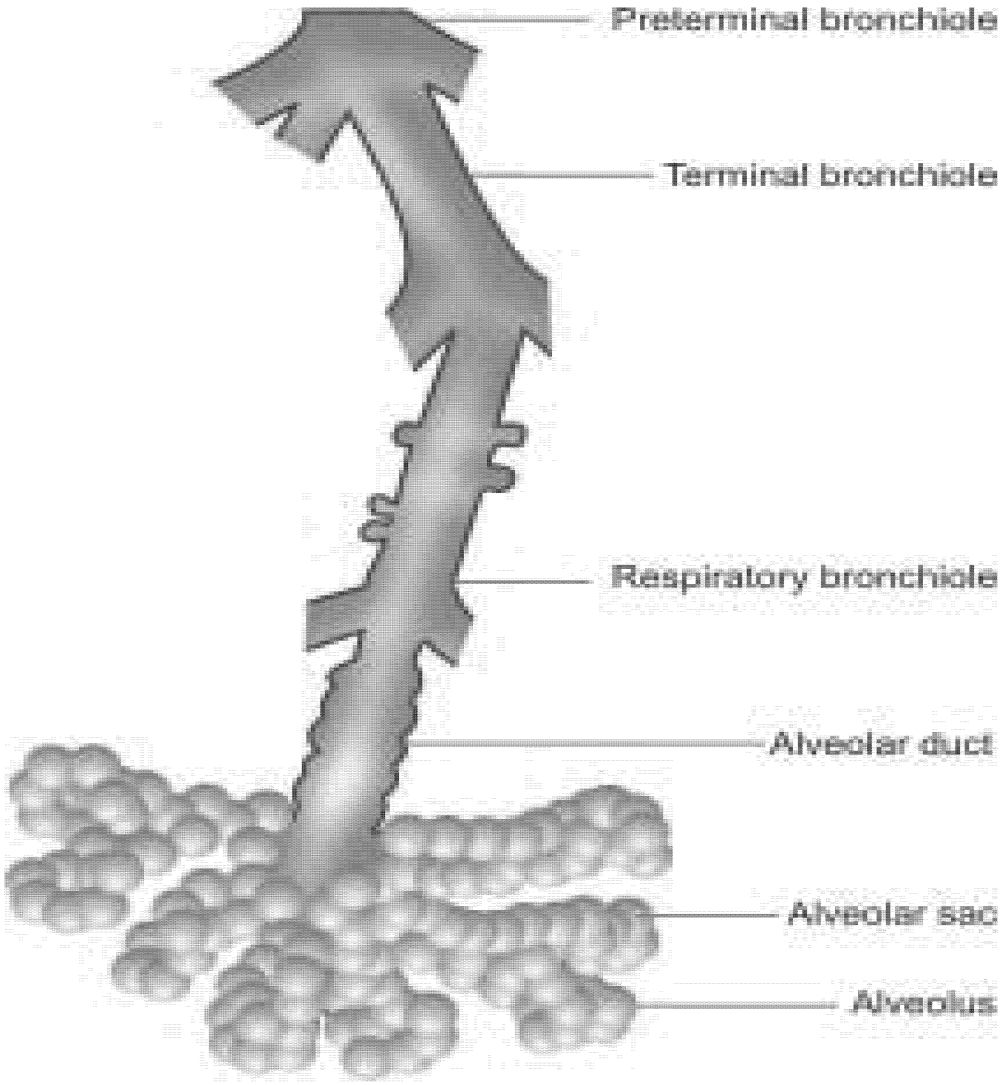
LUNGS (NORMAL STRUCTURE**)**

- *Adult right lung weight: 375 to 550*gm (450 gm)
- Lobes: 3 (upper, middle, lower)

- *Adult left lung weight: 325 to 450 gm (400 gm)*
- *Lobes: 2 (upper, lower), middle-Lingula*

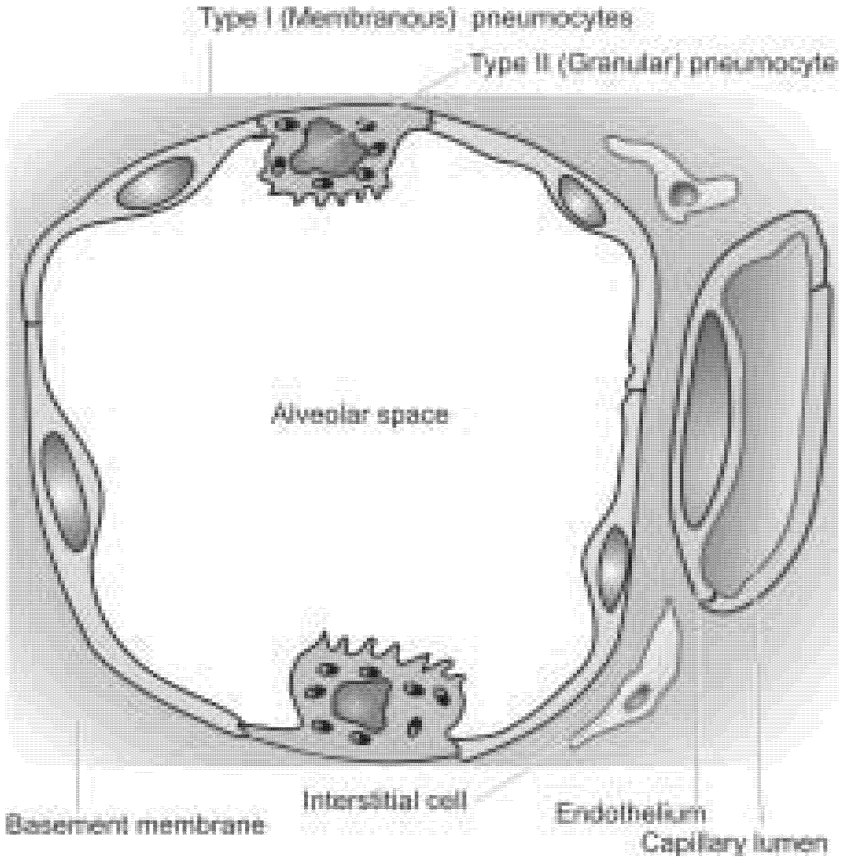
- *Tracheal bifurcation to small bronchi: 8 divisions*
- *Small bronchi to terminal bronchiole: 3-4 divisions*
- Distal to terminal bronchiole: Acinus


Preterminal bronchiole
Terminal bronchiole
Respiratory bronchiole
Alveolar duct
Alveolar sac
Alveolus

Histology Lung

- Bronchi up to bronchiole: Lined by pseudostratified ciliated columnar epithelium, mucus cells, neuroendocrine cells

- Bronchioles: Single layer of PSCE, no mucus cells, have non ciliated clara cells


Type I (Membranous) pneumocytes
Type II (Granular) pneumocyte
Alveolar space
Basement membrane
Interstitial cell
Endothelium
Capillary lumen

Atelectasis and collapse

- **Atelectasis**: Incomplete expansion of lung/part

  (Still born/new born – premature)

  Causes: Cerebral birth injury, CNS malformation, Intrauterine hypoxia
- **Collapse**: Reduction in lung size (Previously expanded) children and adult i.e.

  Compression-pleural effusion, pneumothorax, hemothorax, tumors)

  Obstruction-mucus plug in asthma, foreign body, bronchial tumors, ch bronchitis, bronchiectasis

  Contraction-localised fibrosis

Bronchiolitis, bronchiolitis obliterans

- Inflammatory conditions of small airways: Pediatric and elderly persons
- Aetiology: Viral infection (Adeno virus & RSY), bacterial, fungal, toxic gases, aspiration of gastric contents
- M/E: Bronchioles lumen narrowed by fibrous plugs, bronchiolar wall show lymphocytes, plasma cells. Interstitial pneumonitis & fibrosis

Pulmonary Hypertension

- Normal blood pressure in pulmonary vein: 3-8 mmHg

- PH: systolic blood pressure > 30mmHg

- 1. Primary
- 2. Secondary

- **Primary PH:** Young females 20-40 yrs/ children < 5 yrs

Aetiopathogenesis:

*Neurohumoral

*Thromboemboli/amniotic fluid emboli in pregnancy

*Collagen vascular disease

*Pulmonary veno-occlusive disease

*Ingestion of bush tea, oral contraceptive, appetite depressants

*Familial

- **Secondary PH**: due to lesion in heart/lungs. More common, can occur at any age

Aetiopathogenesis:

*Passive pulmonary HT: Mitral stenosis, Ch LVF

*Hyperkinetic PH: PDA, ASD/VSD

*Vaso-occlusive PH: 3 sub types

Obstructive: Multiple emboli/thrombi, sickle cell disease, schistosomiasis

Obliterative: Ch emphysema, Ch bronchitis, bronchiectasis, PTb, Pneumoconiasis

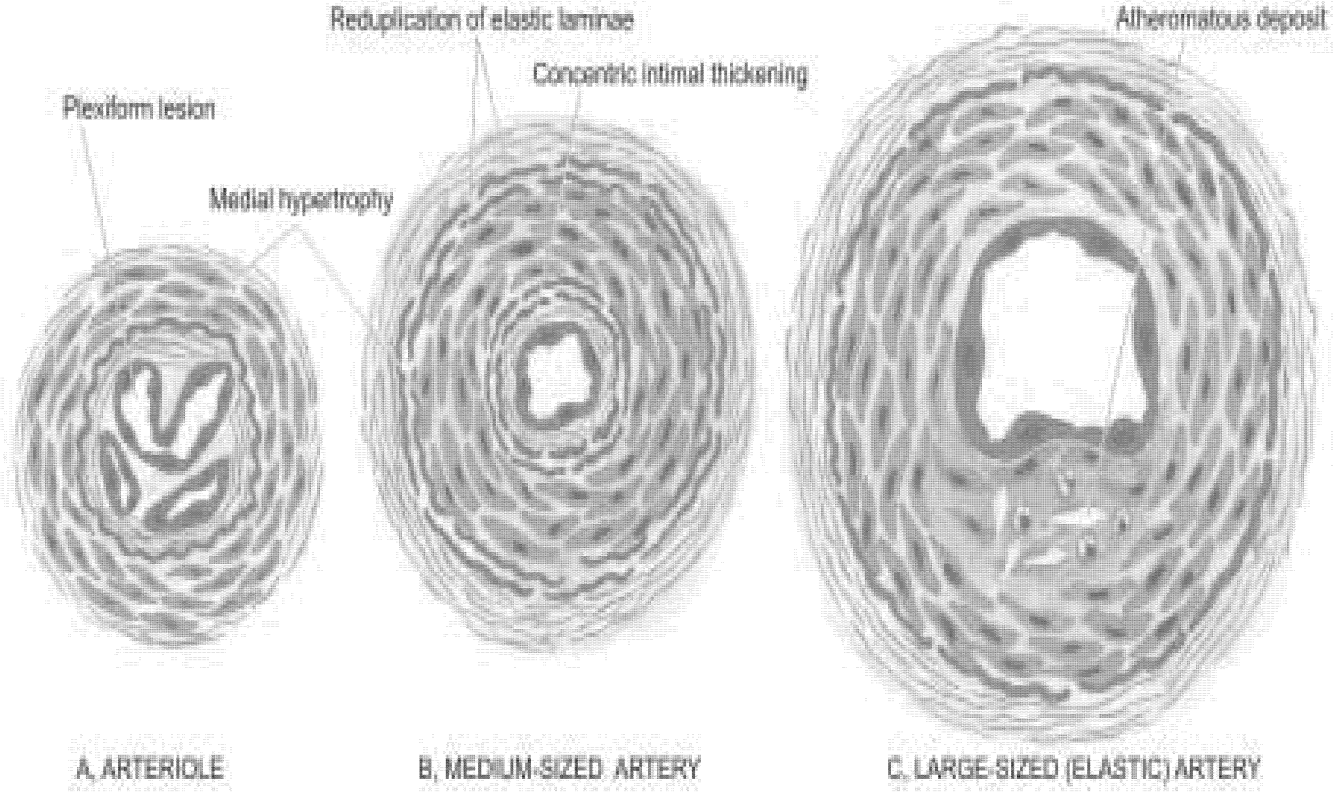
Vasoconstrictive: High altitude, P obesity, Polio, Kyphoscoliosis

- **Morphologic changes**: Similar in primary & secondary PH

- Arterioles & Small pulmonary arteries: Medial hypertrophy, Thickning & reduplication of elastic lamina, intracapillary tuft of capillary formation

- Medium sized pulmonary arteries: Medial hypertrophy, concentric intimal thickning, adventitial fibrosis, Thickning & reduplication of elastic lamina

- Large pulmonary arteries: Atheromatous deposits


Reduplication of elastic laminae
Atheromatous deposit
Concentric intimal thickening
Plexiform lesion
Medial hypertrophy
A, ARTERIOLE
B, MEDIUM-SIZED ARTERY
C, LARGE-SIZED (ELASTIC) ARTERY