

### Serious Disorders

**Heart:** Myocardial Infarction, angina, pericarditis (>15 mins angina pain = consider MI)

**Great Vessels:** Dissecting Aneurysm, Pulmonary Embolism, Pulmonary Infarction, Pneumothorax, Pneumonia, Pleurisy

**Oesophagus:** Oesophageal Rupture, Oesophageal Spasm, Oesophagitis

**Subdiaphragmic Disorders:** Gallbladder, Stomach, Duodenum, Pancreas, Subphrenic collection

**Infections:** Herpes Zoster, Pleurodynia, Infective Endocarditis, Osteomyelitis, Discitis, Tuberculosis, Epidural infections

- Malignancy (Back pain in elder person, unrelenting back pain, night pain, rapidly increasing back pain, weight loss, fever, malaise, hx of cancer, n

### Mechanical Pain

**Pitfalls:** Ischaemic Heart disease (interscapular pain)

Herpes Zoster

GI disorders

Penetrating duodenal Ulcer - lower tx back pain

Oesophageal spasm

**Refer:** Persistent pain, Evidence/suspicion of sinister cause (Cardiac/GI) , Significant Idiopathic Scoliosis/kyphosis

### Tx Pain

- Defined as pain between superiorly by a transverse line through the tip of the T1 Spinous Process, Inferiorly by a transverse line through the tip of the T12 Spinous Process and laterally by vertical lines to the most lateral margins of the ES muscles

- Divided into upper, middle and lower thirds

### Causes

#### MSK chest pain

- Costochondritis

- Muscle Strains

- Sterno-costal dysfunction (2nd-7th joints)

- Lower Cx Dysfunction

- Upper tx dysfunction

#### Tx back pain

- Myofascial Pain Syndrome

- Musculoligamentous Strains - poor posture

- Dysfunction of the lower Cx + Tx (interscapular)

#### Pain radiates from back to the front of the chest

- Vertebral Disorder - irritation of an intercostal nerve root

- Herpes Zoster

- TrP in intercostal Muscle



### In Hx

- Neck and upper back pain = Cx spine
- Anterior Chest pain + Tx spine pain = IHD/Dissection of Tx aorta
- Penetrating injury - surgical, dental, catheterisation/cannulation/self injection/injury = tx osteomyelitis, epidural abscess, discitis

### Red Flags

- Fever accompanying chest pain - pulmonary infections
- Abdominal/flank pain = acute pyelonephritis and cholecystitis
- Unexplained weight loss/fatigue, >50 yos, pain at rest, night pain, failure to improve with treatment = Malignancy
- Abdominal pain that comes and goes + Tx spinal pain = biliary/renal colic
- Shortness of breath, cough, abdominal symptoms, chest heaviness, movement /change of posture not related to pain = cardiac and visceral disorder
- Unrelenting pain with NO relieving factors
- Fracture - minor trauma = osteoporosis

### Tx spine Hx

- Aggravation + relief on trunk rotation ( Aggravated by rotating to one side and relief by rotating opposite side)
- Aggravation of pain by coughing, sneezing or deep inspiration - sharp, catching pain = costovertebral joint

#### Key Hx Questions:

- Back Injury? Did you lift something heavy?
- Fall onto your chest/back?
- Pain wake you at night?
- Low back pain/neck pain?
- Pain come on after walking/strenuous effort?
- Pain come on after eating/soon after going to bed at night?
- Rashes?
- Fever/sweats?
- Taking medications?
- What happens when you take a deep breath, cough or sneezing?

### Exam

- Generalised kyphosis - common in elderly, scheuermanns in younger patients
- Scoliosis = more prominent on forward flexion
- **Palpate:** SPs, Facets, TVPs, Costotransverse junctions, posterior rib curve, surrounding muscles/fascia



### Further investigations

X-ray

Bone scan/MRI if X-ray normal

FBC, ESR, CRP

### In Children

- Can be Psychogenic/unknown (most cases)
- Mean age for chest pain = 12 yo
- Usually MSK (strained pec, shoulder/back muscles after exercise), cough induced pain, costochondritis, asthma
- <12 yos consider cardiorespiratory causes - cough, asthma, pneumonia, heart disease
- Consider tuberculosis, Discitis, osteomyelitis, osteoid osteoma, osteosarcoma for Tx back pain (rare)

### In the elderly

**Consider:** MI, Angina, dissecting aneurysm, ruptured aorta, Herpes, rib fracture, malignancy, pleurisy, pulmonary embolus and GI reflux

**Other:** Malignancy (multiple myeloma, lung, prostate), osteoporosis, vertebral pathological f#, PMR, Paget's, IHD, Penetrating peptic ulcer, oesoph disorders

### Differences between MI and Tx

Feature	Referred from the thoracic spine	Myocardial Ischaemia
Age	Any age, especially 20-40 yrs	Older, with increased possibility with increased age
History of injury	Sometimes	No (unless incidental)
Site and radiation	Spinal and paraspinous, arms, lateral chest, anterior chest, subternal, iliac crest	Retrosternal, parasternal, jaw, neck, inner arms, epigastrium, interscapular
Type of pain	Dull, aching, occasionally sharp, severity related to activity, site and posture, sudden onset and offset	Constricting, vise-like (clenched fist sign), may be burning, gradual onset and offset
Aggravation	Deep inspiration, postural movement of thorax, certain activities (slumping or bending, walking upstairs, lifting, sleeping or sitting for long periods)	Exercise, activity, heavy meals, cold, stress, emotion
Relief	Maintaining erect spine, lying down, firm pressure to back (e.g. leaning against wall)	Rest, Glyceryl trinitrate (GTN)
Associations	Chronic poor posture, employment posture such as at keyboard or computer	Cardiac risk factors such as family history, obesity, smoking, vomiting, dyspnoea, nausea, redness, pallor, sweating

### Costochondritis

- Anterior chest wall pain, radiating into back, abdomen
- Unilateral + sharp in nature
- Exacerbated by breathing, physical activity
- Caused by exercise or URTI

### Clinical Findings

- Vital signs WNL
- **Palpation:** Palpation of joint increases pain, swelling uncommon unless Tietze's syndrome, no warmth/redness
- Tx ROM limited - costosternal pain
- Crepitus not usually felt - consider f#

### DDx

MI

Muscle Strain, SC joint injury

Rib Fracture

Rib Subluxation

Fibromyalgia

GI Reflux

Anxiety

Lung Cancer

### Management

Mobilisation/activator

Heat

Medication (analgesics, NSAIDs)

Trigger point pressure relief

Ultrasound to the tender points

Encourage Abdominal breathing

### Disc Herniation

- Most occur below T9 (T11-T12) , due to increase in stress of the region + changes in facet orientation

- Back pain + radicular pain - may refer to chest wall or abdomen unilaterally/bilaterally

- Aggravated by bending forward, coughing, sneezing, straining

- +ve Beevor's sign + absent abdominal reflexes

- Look for signs of spinal compression; LL Ataxia, Bladder incontinence , UMNL

### Management

- Refer if progressive neurological symptoms/myelopathy signs

- Soft tissue therapies and modalities

- Relaxation Techniques

- PIR

### Rib f#

- Compression injury in the young. In the elderly it is caused by coughing/manipulation

### S&S

Tenderness + swelling

Local spasm

Pain on respiratory movements

Percussion/vibration & Rib cage compression may be aggravating

**Management:** Haemothorax and pneumothorax are complications - chest exam + chest x-ray  
refer to GP/A&E



### Pericarditis

- Inflammation of the pericardium

**S&S** Patient complains of retro/left of sternum pain

Constant Sharp/heavy and acting radiating into the axilla/left arm

Fever and malaise present

Aggravated by deep breathing, coughing and lying down

Relieved by sitting forward

### Pulmonary Embolus

**S&S:** Pleuritic chest pain, Sudden onset SOB, Cough + Haemoptysis, Tachycardia, Increased breathing rate, Signs of DVT, Hypotension, Pleural

**Virchow's Triad:** Stasis of blood, Increased coagulability of blood (smoking, OCP, Cancer), Blood vessel abnormality (previous DVT/Surgery to ve

**Investigations:** Leg US (DVT), V/Q scan, CTPA, D-Dimer

**Management:** Refer to GP for anticoagulation/prophylaxis

### Pneumonia

**S&S:** Cough, Sputum (can contain blood), SOB, Pleuritic Chest Pain, Weakness, Malaise, Myalgia, Fever, Breathless at rest, Chest expansion **red**  
Percussion is **dull** over affected lobe, Auscultation - Crackles, bronchial breathing, pleural friction rub (heard more on expiration)

Bronchial Breathing - Harsher sound. Gap between inspiration + expiration.

### Pleurisy

- Inflammation of the pleura

**S&S** Sharp, Stabbing, well localised pain. Worse on inspiration/coughing

**Causes:** Pneumonia, PE, Chest injuries, Pneumothorax, Tumours of the lung, Inflammation associated with some forms of arthritis

### Pleural Effusion

- Collection of fluid within pleural space

**Transudation:** Accumulation of fluid due to excess fluid

**Exudation of fluid:** Inflammation - increased vascular permeability

**S&S:** SOB, Pleuritic chest pain, Breath sounds absent, Stony Dull percussion, Reduced chest expansion, Mediastinal Shift if large

### Pneumothorax

- Air trapped between lung and chest wall

- Young, thin men, Trauma, Lung diseases, spontaneous = Marfan's

**S&S:** Sudden, sharp stabbing pain on one side of the chest, SOB, Pain worse on inspiration, Tachycardia, Reduction in breath sounds on affected side, Resonant/hyperresonant percussion

- Tension Pneumothorax - Rare complication - volume + pressure of the pneumothorax increases due to the tear acting as a one way valve. Puts pressure on mediastinal shift



### Lung Cancer

- Mainly Bronchial Carcinoma

- Can be small cell/non-small cell

- Risks: Active/passive cigarette smoking, increased age, industrial dust - asbestos, chromium, arsenic, iron oxides, radiation

- **S&S:** Cough, SOB, Chest pain, Haemoptysis, Bone pain, Weight loss, Finger Clubbing, Fever, Weakness, Dysphagia, Wheezing and stridor

**Other S&S:** Recurrent/slowly resolving pneumonia, Pleural effusion, HPOA, Supraclavicular/axillary lymphadenopathy, Paraneoplastic syndrome (cells)

**Paraneoplastic syndrome:** Ataxia, dizziness, nystagmus, difficulty swallowing, loss of muscle tone, loss of fine motor skills, slurred speech, memory disturbances, dementia, seizures, sensory loss in the limbs

**Hypertrophic Pulmonary Osteoarthropathy:** HPOA, joint stiffness and severe pain in the wrists and ankles, clubbing, gynecomastia

**Pancoast Tumour:** Severe shoulder/arm pain + Horner's syndrome

### Asthma

- Inflammatory disease, intermittent and reversible obstruction of the airways:

- Spasm of the smooth muscle that pulls on the cartilaginous support

- Excessive production of secretions and oedema

**S&S:** Wheezing, Coughing, SOB, Tightness/pain in the chest

**Triggers:** URTI, Cold Air, Exercise, Pollution, Animals, Time of the day (early morning)

**Diagnosed by:** Spirometry - measures PEFR - reduced FEV1 in the second PEF

**Classifications:** >1 of the symptoms above/ Hx of atopic disorder, Family Hx of asthma/atopic disorder, Widespread wheeze heard

**Management:** Medication (shortacting B2 Agonist - Salbutamol, Long acting B2 agonist - Salmeterol. Steroids, Leukotriene receptor antagonist, O groups, recognise when their asthma is bad

### COPD

- Chronic bronchitis, emphysema or both

- Caused by smoking, occupational exposure to noxious gases, Alpha 1 antitrypsin deficiency

- Airflow limitation, unlike asthma it is permanent

**S&S:** >35 yo + Hx of smoking and respiratory symptoms: SOB on exertion, Cough + sputum production, Wheezing, frequent chest infections, pursed lip breathing, Increased use of accessory muscles of respiration, Underweight, Cyanosis, Hyperinflation of the chest, Downward Displacement of liver, Prolonged expiration

**Investigations:** Spirometry - Reduced FEV1 + reduced FEV1/FVC ratio

**Management:** To GP = Stop smoking, Pulmonary Rehab, Pneumococcal + influenza vaccine, Medications - Bronchodilator inhalers, steroids, antibiotics



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