**MEDIASTINAL MASS/SUPERIOR VENA CAVA (SVC) OBSTRUCTION:**

- **THIS IS A POTENTIALLY LIFE THREATENING COMPLICATION OF CANCER**
- **ALL PATIENTS MUST BE URGENTLY DISCUSSED WITH OXFORD PAEDIATRIC HAEMATOLOGY/ONCOLOGY CONSULTANT**
- **ADOPT A LOW THRESHOLD FOR ASSESSMENT BY CONSULTANT ANAESTHETIST AND EARLY DISCUSSION FOR TRANSFER TO PHDU/PICU**

**OVERVIEW:**
Any large mediastinal tumour can compress the trachea or SVC, especially anterior mediastinal masses. SMS/SVCS is nearly always due to malignant tumour, unless previous surgery (VA shunt, CHD, or SVC thrombus secondary to CVL). Mediastinal masses may be associated with pleural effusion.

**Superior vena cava syndrome (SVCS):** signs and symptoms of SVC compression  
**Superior mediastinal syndrome (SMS):** signs and symptoms of SVC and tracheal compression

**ALGORITHM:**

1. Symptoms/signs suggestive of mass leading to CXR

   ![CXR Diagram]

   - Anterior mediastinal mass
   - ? Pleural Effusion

   ![Discussion with Haem/Onco Consultant]

   - DISCUSS WITH HAEM/ONC CONSULTANT
   - LOW THRESHOLD REVIEW BY CONSULTANT ANAESTHETIST
   - TRANSFER PTC/PHDU/PICU

   ![Investigations (Initial):]

   - FBC and film
   - Biochemistry: UEC, LDH, Uric acid, Bone profile, AFP, BHCG

   ![Investigations at PTC (Led by Consultant):]

   - CT scan if possible (not mandatory)
   - Pleural aspiration by Respiratory team
   - Histology: biopsy/BMA
PRESENTATION:

Symptoms

- Dyspnoea (particularly when lying flat)
- Chest discomfort
- Hoarseness due to recurrent laryngeal nerve compression
- Dry/bovine cough
- Headache, confusion & other neurological symptoms

Signs

- Fullness and plethora of face
- Wheeze or stridor (particularly when lying flat)
- Cyanosis
- Engorgement of veins on upper chest wall and neck veins

DIFFERENTIAL DIAGNOSES:

Anterior mediastinal masses:

- Acute Lymphoblastic Leukaemia (usually T-cell)
- Non – Hodkin Lymphoma (usually T-cell)
- Germ cell tumours (teratoma, malignant GCT)
- Hodkin Lymphoma
- Rare: Thymoma
- Non – malignant: bronchogenic cysts, goitre, lipoma, lymphangioma, enteric cysts

Posterior mediastinal masses (less likely to cause compressive symptoms):

- Neuroblastoma
- Ewing’s sarcoma/Peripheral PNET
- Rhabdomyosarcoma
- Non - malignant: Neurenteric cyst
MANAGEMENT:

- **ALL DIAGNOSTIC PROCEDURES CAN PROVOKE ACUTE RESPIRATORY OR CARDIOVASCULAR OBSTRUCTION**

- **DO NOT DELAY TRANSFER TO PRINCIPAL TREATMENT CENTRE (PTC) TO PERFORM INVESTIGATIONS LOCALLY**

- **ALL INVESTIGATIONS MUST BE DISCUSSED WITH AND LED BY OXFORD HAEM/ONC CONSULTANT.**

- **ALL HYPOXIC, ORTHOPNOEIC OR RESPIRATORY COMPROMISED PATIENTS MUST BE DISCUSSED WITH ANAESTHETIST**

- **DO NOT SEDATE UNLESS A CONSULTANT ANAESTHETIST IS PRESENT**

**Assessment of anaesthetic risk:**

- Ensure airway is safe (discuss with Consultant Anaesthetist if unsure)
- Continuous cardiovascular and respiratory monitoring and pulse oximetry
- Anaesthetist may require:
  - Echocardiogram (discuss with Cardiology team on call)

**Investigations: Start with least invasive investigations**

**Radiology:**

- Chest x – ray (portable or patient must be accompanied to radiology by medical staff)
- USS Chest: assess for pleural mass and fluid
- USS abdomen: assess for hepatosplenomegaly/lymphadenopathy
- CT scan (chest/abdomen/pelvis), provided child can lie flat – Do not delay transfer to PTC to perform CT scan

**Haematology:**

- FBC & blood film (leukaemia/lymphoma).

**Biochemistry:**

- LDH – if very raised (>2xULN) may support malignancy
- Serum AFP, ßHCG - germ cell tumour (not always raised)
- Urinary catecholamines/metadrenalines (neuroblastoma)

**Pleural fluid:**
• Pleural effusion aspiration by Paediatric Respiratory team may be diagnostic, provided the sample is analysed immediately
• Liaison with the haematology/cellular pathology staff is vital
• Fluid samples sent to:
  o **Haematology lab**: Flow cytometry for cellular markers
  o **Histology/Cytology lab**: for immunohistochemical (IHC) assessment
  o **Oxford Cytogenetics lab**: for cytogenetics/FISH
  o **Microbiology lab**: MC&S

**Histology (if considered safe by Haem/Onc AND Anaesthetic Consultants):**
• BMA (consider local anaesthetic)
• Peripheral lymphadenopathy – excision biopsy under local anaesthetic

**Treatment:**
• Treatment must only be initiated after discussion with Oxford Haem/Onc Consultant
• Dexamethasone (6mg/m$^2$/day in 2 divided doses po/IV, no maximum dose) may be required in urgent circumstances
• Ensure fluid replete but avoid overhydration (1.5 – 2l/m$^2$/day)

**References:**
1. Patil VP. Airway emergencies in cancer. Ind J Anaesth (2007); 11(1)
## Review

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<td>Dr Sheila Lane, Paed Oncology Consultant</td>
<td>New doc</td>
<td>June 2011</td>
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<td>Dr Shaun Wilson, Paed Oncology Consultant</td>
<td>Significant re-format, change of practice and additions</td>
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