Case Presentation
THYMOMA

NO CONFLICT OF INTEREST
History

• 35 year old, African male
• Background history
  HIV (+) on HAART; CD4 = 847 & VL = LDL
• No family history of any malignancies
• Non smoker
• Business owner
History

Presented to Internal Medicine with a six month history of:

- progressive dyspnoea (currently NYHA grade III)
- non productive cough
- pleuritic chest pain
- weight loss (>10% body weight)
- dysphagia
- Visual disturbances: diplopia
Special Investigations

XRAY: PA

XRAY: LAT
Special Investigations

Bloodwork
- FBC + Diff
- UKE
- CMP
- Cardiac markers (myoglobin, CK)
- LFTs

Echo-cardiogram
- Large, solid tumor anteriorly in the position of the thymus
- RV compression, encasing the LV
- Infiltrates the RA & LA
- RV & RA dilatation
- TR
- Cor Pulmonale
- Encasing aortic arch, brachiocephalic vein, right caroid artery and some pulmonary veins
- EF: 66%

Within normal limits
Differential Diagnosis

Benign vs Malignant?

Malignant Picture

- Thymic origin
  (Thymoma, Thymic carcinoma, Carcinoid)
- Primary Lung cancer
- Lymphoma (Hodgkin/Non Hodgkin)
- Germ cell tumors
  (Seminoma/Non seminoma/Mixed germ cell)
- Mesothelioma
Histological diagnosis

• *Pleural biopsy via thoracoscopy (unresectable lesion)*

  **Description**

  • The pleural membrane shows a nested and vaguely lobulated proliferation, characterized by sheets of rounded to *polygonal tumor cells* displaying moderate, pale eosinophilic cytoplasm and ovoid vesicular nuclei with small multiple nucleoli. *Numerous small reactive lymphocytes* are intermingled amongst the tumor cells.
  
  • There is *minimal* nuclear atypia
  
  • Immunohistochemistry
    
    AE1/AE3: Strongly and diffusely positive
    
    LCA: *highlights reactive lymphocytes*
    
    CD5: highlights reactive T-cells
    
    Ziehl-Neelsen stain is negative for acid fast bacilli

  Morphology and IHC stains in keeping with an:  
  
  Thymoma (Type-B3)
# WHO Classification of Thymomas

<table>
<thead>
<tr>
<th>WHO TYPE</th>
<th>HISTOLOGIC DESCRIPTION</th>
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<tbody>
<tr>
<td>A</td>
<td>Composed of neoplastic oval or spindle-shaped epithelial cells without atypia or lymphocytes. More resemblance to medullary cells.</td>
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<tr>
<td>AB</td>
<td>Similar to type A, but with foci of lymphocytes (mixed)</td>
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<td>B1</td>
<td>Normal thymic cortex with areas similar to thymic medulla</td>
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<tr>
<td>B3</td>
<td>Predominantly polygonal epithelial cells with mild atypia. Few lymphocytes. “Well differentiated thymic carcinoma.”</td>
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<td>C</td>
<td>Thymic Carcinoma. Cytological atypia and a cyto-architecture resembling carcinoma that is distinctively unlike normal thymus tissue.</td>
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Special Investigations

FDG PET/CT SCAN

• Macro-lobulated **mediastinal soft tissue mass** with focal calcifications and areas of necrosis (SUV 7.04)
• Multiple **pleural based pulmonary nodules** Multiple matted **mediastinal lymph adenopathy**
Special Investigations

**FDG PET/CT Scan (continued)**

- **Hepatomegaly** with ill defined hypodense liver lesions (SUV 8.23)
  - Largest: 53 X 37mm (segment 8)
- Multiple, matted **celiac and para-aortic lymph adenopathy** (SUV 8.23)
  - Largest: 13.6mm
- **Encasement** of descending abdominal aorta, celiac trunk, SMA and right renal artery
- **Aorto-caval node**, 22mm, **IVC infiltrated** (L1) (SUV 7.18)
<table>
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<th>Stage</th>
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<td>I</td>
<td>Macroscopically completely encapsulated, with no microscopic capsular invasion.</td>
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</table>
| II    | a  Macroscopic invasion into surrounding mediastinal fatty tissue or mediastinal pleura  
|       | b  Microscopic invasion into the capsule |
| III   | Macroscopic invasion into surrounding organs |
| IV    | a  Pleural or pericardial implants/dissemination  
|       | b  **Lymphogenous or hematogenous metastases** |
Radiation Oncology Referral

Patient was referred as an **EMERGENCY** for SVC obstruction

**ON EXAMINATION**

*General*
- ECOG PS = 3 on a wheelchair
- Acyanotic on nasal prong oxygen – saturation of 93%
- Dyspnoea at rest
- Temporal wasting
- No pallor
- No lymphadenopathy palpable
- Oedema of neck
- Distended neck veins
Physical Examination

**Systemic**

- **CNS**: awake and orientated (-) CN fallout ; (-) visual disturbances (-) obvious focal neurological signs.
- **CVS**: resting tachycardia, sinus rhythm, haemodynamically stable
- **RESP**: orthopnoea but able to lie flat for +/- 10min period, shallow breaths
- **ABDO**: distended abdominal veins, hepatomegaly
Management Plan?
Important Points

• Extensive disease and performance status
• Acute symptoms
• Acute symptoms need to be addressed ASAP!
• Future treatment options need to be taken into account.
Important Points

Tumor invasiveness (disease stage)
10 year, disease-free survival rates

- Stage I: 92%
- Stage II: 87%
- Stage III: 60%
- Stage IV: 35%

**Significant!**
THYMIC EPITHELIAL TUMORS

Radiological diagnosis of resectable mediastinal mass

- Surgery
  - Stage I or II R0
    - RT and evaluation for adjuvant CT
      - Follow-up
  - Stage III or R1-2

Histological diagnosis for unresectable disease

- Neoadjuvant Treatment
  - Down-staging
    - Surgery
      - Evaluation for adjuvant RT if not applied
      - Follow-up
  - Progression
    - Stable disease
      - Evaluation for adjuvant RT if not applied, otherwise Follow-up
    - Second-line treatment or RT if local progression only
- Definitive concurrent or sequential CT/RT
- First-line treatment

Management Plan

1) Address the acute, life threatening symptoms
   Radiotherapy

2) Offer the patient chemotherapy

3) Assess the patient’s response to chemotherapy
   Good response – consider radical radiotherapy
   Poor response – palliative radiotherapy when appropriate

4) Address paraneoplastic syndromes

5) Palliative care team from the get-go!
Management: Radiotherapy

Prescription:
6Gy in 1 fraction

Treatment plan:

Modality: 3D-CRT; 10MV
Beam arrangement: AP/PA

Bulk of tumor encompassed by 100% of the dose
Management: Radiotherapy

Treatment Plan (isodose distribution)

✓ Tolerance doses acceptable
Treatment Response

• Followed up, post radiotherapy
  Improved PS, respiratory symptoms and pain control

• Declined further treatment
Discussion

1) Thymoma accounts for 20% of all mediastinal tumors
   - In your setting, are Thymomas frequently diagnosed?
   - When patients are diagnosed, how do they present? What stage?

2) 45% of patients who have a Thymoma also have Myasthenia Gravis.
   - In your setting, how is this managed/treated?

3) The management of Thymoma includes a Multidisciplinary Team.
   - What is your approach to a patient with advanced disease?

4) Is there a the role for TARGETED AGENTS in the management of Thymoma?
   (EGFR inhibitors, KIT inhibitors, VEGF inhibitors)
References


• Perez & Brady's Principles and Practice of Radiation Oncology. By: Edward C. Halperin; David E. Wazer; Carlos A. Perez; Luther W. Brady. Publisher: Wolters Kluwer Health (pages 3666-3704)

• Handbook of Evidence-Based Radiation Oncology. Editors: Hansen, Eric K., Roach III, Mack (Eds.) (pages 338-338)

• NCCN Thymoma and Thymic Carcinoma v2.2019
THANK YOU!