MEDICINE

432 Team

31 Lymphoma

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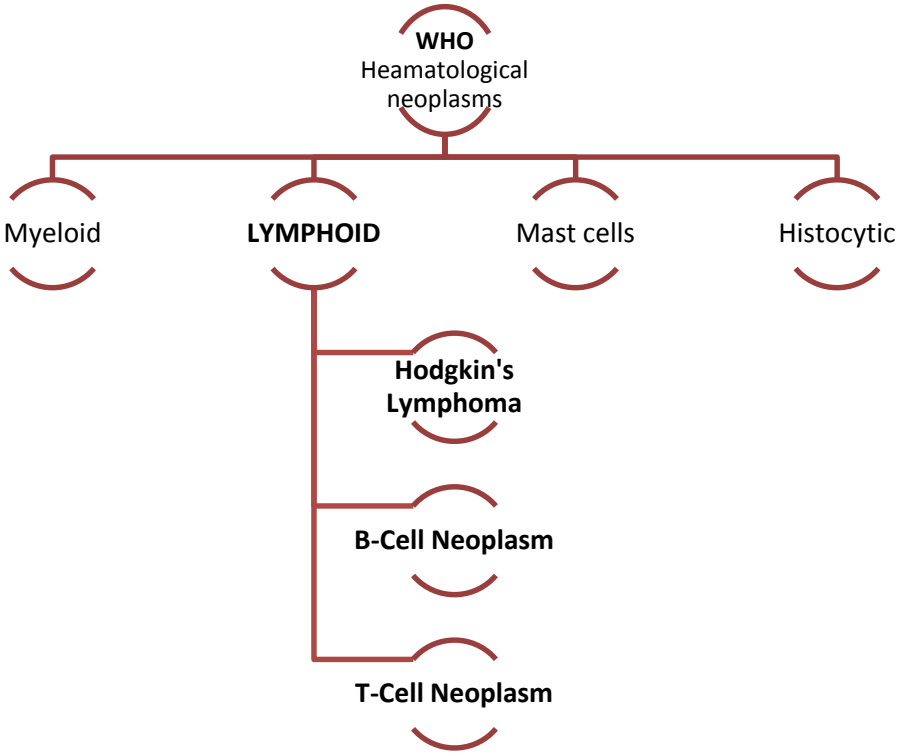
COLOR GUIDE: • Females' Notes • Males' Notes • Important • Additional

Objectives

NOT GIVEN!



Lymphomas are divided pathologically to:

Hodgkin's Lymphoma

- Reed-strenberg cells
- Large malignant cells of B-cells origin surrounded by reactive non-malignant T-cells, plasma and eosinophils
- Painless, rubbery lymphadenopathy in neck or supraclavicular
- Types: Nodular, Nodular-sclerosing, Mixed-cellularity, Lymphocyte-rich HL, Lymphocyte-depleted HL

Non-Hodgkin's Lymphoma

- Monoclonal proliferation of B-cells (70%) OR T-cells (30%)
- Classified to:
- High-grade
- Low-grade
- Types: Follicular, Burkitts, Mantle-cell, MALT and T-cells Lymphoma
- Some are associated with Epstin-Bar Virus and others with chromosomal translocation. e.g. t(14,18)

Clinical grouping of Lymphomas: *It has many classifications, FOCUS!*

1. Indolent or *Low-grade*
2. Aggressive or *Intermediate-grade*
3. Highly-Aggressive or *High-grade*

1. Indolent or Low-grade: *approximate international incidence "Slow-growing may take years to show symptoms and to start treatment but no definitive treatment"*

- Follicular lymphoma **Grade 1,2** 22% **most common**
- Marginal zone lymphoma:
  - Nodal 1%
  - Extranodal (MALT) 5%
- Small lymphocytic lymphoma 6%
- Lymphoplasmacytic* 1%(associate with Weldenstroms macroglobunemia)

2. Aggressive or Intermediate-grade: approximate international incidence

- Diffuse large B-cell lymphoma %21 **most common**
- Primary mediastinal large B cell lymphoma %2
- Anaplastic large T / null cell lymphoma %2
- Peripheral T cell lymphoma %6
- Extranodal NK / T cell lymphoma, nasal type
- Follicular lymphoma **Gd3**
- Mantle cell lymphoma **6% "very bad and acts as carcinoma"**

3. Highly Aggressive or High-grade: approximate international incidence "worst in prognosis"

- Lymphoblastic lymphoma %2
- Burkitts lymphoma %1 "patient may die in 6 months or during treatment"
- Burkitt-like lymphoma 2%

Epidemiology in SA:

Non-Hodgkin Lymphoma is number **3** cancer in SA!
Hodgkin Lymphoma is number **7** cancer in SA and is common in young age!
In combination, they are number **2** cancer in SA!

Staging system of Lymphomas: *It has **both**, number and latter!*

Ann Arbour Classification: Important!

I	Single lymph region (or lymphoid structure) *
II	2 or more lymph node regions on the same side (above or below the diaphragm)
III	Lymph node regions on both sides of diaphragm (Above and Below)\ or the Spleen
IV	Extensive extranodal disease (more extensive then "E")\ (Liver, bone marrow, lung, pleura, skin,…….)

A	**Asymptomatic**
B	**One** of them is enough to stage it as B: it usually needs aggressive treatment **1) Fever:** **> 38° " recurrent" up and down in the chart** **2) Night sweats:** **drenching(excessive), recurrent** **3) Weight loss:** **> 10% body weight in 6 months**
X	**Bulky disease** **≥ 10 cm** **or** **> 1/3 internal transverse diameter @ T5/6 on PA CXR** X-ray is done to measure the highest diameter which is at T5\T6 level and take deep inspiration and measure the diameter. Local recurrence is high so radiotherapy is indicated after the chemo!
E	Limited extranodal extension from adjacent nodal site

Note: important

*A patient is having a cervical lymph node involvement level 2, 3 and 4 (Stage I since it is only one region) the number of lymph nodes in the region reflects the prognosis but not the stage!
*A patient is having a cervical and inguinal lymph nodes involvement (Stage III)
*Stage IB is worse than IIA
*X is divided: Thoracic " or mediastinal" and extra-thoracic
***Doing post treatment radiation therapy for patient with X will reduces the recurrence from 60% to 15%**
***Radiation is to reduce the recurrence locally and chemo to reduce the recurrence systematically**
* 25-y-o patient presented to you with a lump in his neck, DDx:
Benign causes**: Infection > tender and red + source of infection "URTI" + increase "fast" and decrees in size + respond to antibiotic**
Metastatic: Thyroid tumor+ Nasopharyngeal carcinoma associated with "Epstein-Bar virus"
*Systemic diseases can cause Lymphoma: **HIV** & **SLE**
***Drug-induced Lymphadenopathy**: **Phenytoin** and some diuretics.

Essential investigations for staging Lymphomas:

- Biopsy – pathology review
  - Core-biopsy "True-cut" -> for lymphoma
  - Fine-needle
  - Excisional
- History – B symptoms, PS
- Physical Exam – nodes, liver, spleen, oropharynx
- CBC-> look for bone marrow suppression if invade the bone marrow or in leukemia
- Creatinine, liver function tests, LDH, calcium
- Bone marrow aspiration & biopsy
- CT neck, thorax, abdomen, pelvis -> check other lymph nodes for staging

Additional investigations: "site-dependent"

- PET or ^{67}Ga scan -> PET is highly specific and sensitive 95%, but not found in every hospital "expensive". Gallium is less (60%-70% specific and sensitive), **order it prior to the treatment**

and I expect it will be positive but if it is negative "false negative result" so won't be used for follow-up. This is for the residual after treating the patient.

- ♣ CT / MRI of head & neck
- ♣ Cytology of effusions, ascites
- ♣ Endoscopy
- ♣ Endoscopic U/S

Gastric lymphoma

- ♣ MRI - CNS, bone, head & neck presentation
- ♣ HIV
- ♣ CSF cytology - testis, paranasal sinus, peri-orbital, paravertebral, CNS, epidural, stage IV with bone marrow involvement

International prognostic index for NHL only:

Age	**> 60**
Stage	**3, 4**
PS	**ECOG ≥ 2**
LDH	**> normal**
Extranodal	**> 1 site**

	Number of Risk Factors	**5 yr OS** Overall survival
Low Risk	**0-1**	**75%**
Low-Intermediate	**2**	**51%**
High-Intermediate	**3**	**43%**
High Risk	**4-5**	**26%**

Note:

*Stage I or II without B symptoms or bulky in Hodgkin and from the good types (Nodular-sclerosis or lymphocyte-predominant) No need for bone-marrow aspiration but we did it here because it is more aggressive than the west

* 30-y-o patient comes with single lymph node and found to be stage I follicular "low-grade", only monitor or may be radiotherapy only!

*Mantle-cell is aggressive, no monitor!

*ECOG is a scale to measure the performance status from 0-4

0 is normal performance while 4 is considered as dependent person. 5 is death!

*NHL may occur in congenital immunodeficiency, immunosuppressed patient (Post-transplant or HIV). Some types are associated with Epstein Barr virus with post-transplant NHL, Human Herpes Virus 8. Also chromosomal translocation!! t (14,18) > Follicular causes dysregulation in BCL-2 gene which inhibits apoptotic cell death. t (8, 14) in Burkitt's and t(11, 12) in Mantle and alter "c-myc & cyclin d1"m respectively, and results in malignant proliferation.

General rule for treatment: important

- ✓ *Stage I & II:* ***Radiotherapy + Chemotherapy***
- ✓ *Satge III & IV:* ***Chemotherapy only. Except if Bulky or Residual!***
- ✓ *Some say that if* ***residual give more chem***

Management:

<table>
<tr><td rowspan="2">Indolent
Follicular Gd 1/2, small lymphocytic, marginal zone</td><td colspan="2">A- Limited: (Stage 1A, 2A if 3 or less adjacent node regions)
• IFRT 30-35 Gy “Involved field radiotherapy”, “Use 35 Gy for follicular. 30 Gy for SLL, marginal” (Gy is the unit for measuring the radiotherapy)
• Expect ~ 40% long term FFR
*Alternate:
• CMT “chemotherapy”
• Observation. Treat when symptomatic.</td></tr>
<tr><td colspan="2">B- Advanced: (some Stage 2, Stage 3, 4)
• Palliative RT* for localized symptomatic disease: *IFRT 15 – 20 Gy / 5
• Palliative chemotherapy** for disseminated symptomatic disease:
**CVP, chlorambucil
Observation only if low bulk, asymptomatic: Treat when symptomatic</td></tr>
<tr><td rowspan="2">Aggressive</td><td>A- Stage I, some Stage II “Both chemo & RT”
CHOP* x 3 + IFRT (35-45 Gy) “contagious”
Expect ~ 75% long term FFR</td><td rowspan="2">*CHOP q 21 days
• Cyclophosphamide
• doxorubicin (formerly Hydroxydaunorubicin)
• vincristine (“Oncovin”)
• Prednisone (p.o. x 5 days)</td></tr>
<tr><td>B- Stage III, IV, B symptoms, or bulky disease
CHOP* x 6-8
IFRT (35-45 Gy) to - sites of initial bulk
- residual disease (i.e. PR)</td></tr>
<tr><td>Extranodal</td><td colspan="2">• Same treatment as nodal lymphoma
<u>Notable Exceptions:</u>
• Gastric MALT
• Testis
• CNS
• Skin</td></tr>
</table>

MALT Lymphoma: mucosal associate lymphoid tissue

It is a Marginal zone B-cell lymphoma of extranodal (MALT) type

- ♠ Stomach. assoc. with Helicobacter pylori infection*
- ♠ Salivary Gland. assoc with Sjogren’s syndrome**Chronic antigen stimulation
- ♠ Thyroid. assoc with Hashimoto’s thyroiditis**Chronic antigen stimulation
- ♠ Orbital (lacrimal, conjunctiva)
- ♠ Other: Waldeyer’s ring, breast, bladder, lung, skin

Management: ***Differs than other lymphomas since it can be treated medically!!***

- ♦ Stage IE , H. pylori +
  → PPI, 2 antibiotics (e.g. clarithromycin, amoxicillin)
  F/U gastroscopy + Bx q6mo for 2 yrs, then q1yr
- ♦ Stage IE, H. pylori - or antibiotic failure
  → IFRT 30 Gy (95% local control)
- ♦ Stage 2 or higher
  → Treat as indolent lymphoma + H. pylori eradication

Hodgkin's Disease:

Reed-Sternberg is bi-nucleated cell with dark cytoplasm and it differentiates between Hodgkin from Non-Hodgkin. Usually it has a good prognosis.

WHO Classification of Lymphoid Neoplasms:

1. Nodular lymphocyte-predominant HL*
2. Classical HL
   - A. Nodular sclerosis HL
   - B. Lymphocyte-rich classical HL*

   } Good prognosis

   - C. Mixed cellularity HL
   - D. Lymphocyte depletion HL

   } Bad prognosis, elderly, treatment may not be given cuz the patient is very ill

* Formerly, both of these were classified as lymphocyte predominance Hodgkin's Disease

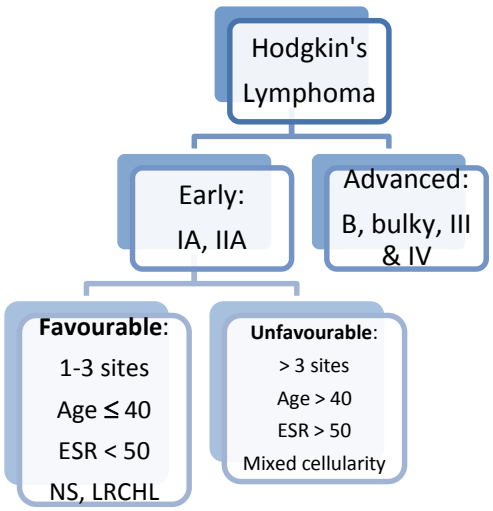
Investigations for staging Hodgkin:

- Biopsy – pathology review
- History – B symptoms, pruritis, alcohol pain, PS
- Physical Exam – nodes, liver, spleen, oropharynx
- CBC, ESR
- creatinine, liver function tests, LDH, calcium, albumin
- Bone marrow aspiration & biopsy: if abnormal CBC, Stage 2B or higher
- CT thorax, abdomen, pelvis

Additional:

- PET scan
- 67Ga scan
- Lymphangiogram – if expertise available, no PET
- Pregnancy test
- oophoropexy / semen cryopreservation - if chemotherapy or pelvic RT
- Dental assessment – if oropharyngeal RT

Prognosis:



Management: ***The doctor said: same treatment but only difference is that if residual, only RT. It is very nice disease with good prognosis 😊 + no need to know the type of chemo.***

<table>
<tr><td>Early Stage</td><td colspan="2">A- Favorable: (Stage 1A, 2A if 3 or less adjacent node regions)
♦ ABVD* X 3 – 4 (Fewer cycles ABVD may be adequate. GHSG HD10 study, in progress, compares ABVD x 2 vs. ABVD x 4)
♦ IFRT 30 Gy / 20 (Lower radiation dose may be adequate. GHSG HD10 study and EORTC H9 study, in progress, compare IFRT 20 Gy with 30 Gy (HD10) and 36 Gy (H9))
Caution: late toxicity data awaited
<u>*Alternate:</u>
♠ STNI “subtotal nodal irradiation”: Mantle + Para-aortic nodes, spleen 35 Gy/20
○ historical gold standard
○ survival ≡ CMT
○ use if CTx contraindicated, but: high risk late toxicity
♠ ABVD* x 2 + IFRT
○ as per BCCA guidelines
○ awaiting clinical trial results (GHSG HD10)
♠ ABVD* x 6 (awaiting NCIC HD.6 results)</td></tr>
<tr><td></td><td>B- Unfavorable:
♦ ABVD* X 4 – 6
♦ IFRT 30 Gy / 20
(NB: Overlap with favourable prognosis ESHL)</td><td>ABVD*: IV Days 1, 15
➢ doxorubicin (Adriamycin)
➢ Bleomycin
➢ Vinblastine
➢ Dacarbazine</td></tr>
<tr><td>Advanced Stage</td><td colspan="2"><u>Stage 3, 4, B symptoms, bulky disease</u>
♣ ABVD X 6 – 8*
♣ IFRT
○ sites of bulky disease
○ sites of residual disease (35 Gy / 20)
* ABVD until 2 cycles past maximum response</td></tr>
<tr><td>Very Favorable</td><td colspan="2">♠ Stage 1A NLPHL*
♠ Stage 1A high neck NS, LRCHL
→ IFRT 35 Gy / 20
Nodular Lymphocyte Predominant HL
○ usually localized, peripheral nodal sites
○ good prognosis, but some late relapses (>10yr)</td></tr>
</table>

Note:

*HL is 3 times more in person with history of infectious mononucleosis but no definitive causal link to Epstein Barr virus is proven.

Rough Approximation of Prognosis of HL:

	DFS	*OS*
Early	**80 – 90%**	**85 – 95%**
Advanced	**40 – 80%**	

If RT only (STNI): Deaths from 2nd malignancy > deaths from Hodgkin's disease by 15 – 20 yr

DFS: disease free survival. Live w\o disease!

* Depending on Hasenclever Prognostic Index: based on Age>45, male, Stage 4, albumin < 4, Hb < 10.5, WBC<600 or >15000

Side Effects of Radiotherapy for HL:

Doctor said read it, no one will ask you about it!

Depend on

- ♣ Dose/fractionation
- ♣ Site
- ♣ Irradiated volume
- ♣ Chemotherapy

Toxicity of STNI for Hodgkin's Lymphoma:

ACUTE	**SUBACUTE**	**LATE**
• Skin erythema • Local alopecia • Xerostomia • Dysphagia • Fatigue • ↓ WBC, platelets • Para-aortic RT - nausea, vomiting - diarrhea	• Fatigue • Xerostomia • Pneumonitis < 5%, dependent on lung volume treated • Herpes Zoster • Lhermitte's Syndrome	♦ Hypothyroidism ♦ Cardiac • (CAD, valvular disease, pericarditis) • 5% risk cardiac death in 20 yrs (2-3 x expected) ♦ 2nd malignancy (↑ risk of most solid tumors) • esp. breast ca if < 25 yrs at time of RT • Lung ca in smokers • Solid tumour risk rises after 10 years from RT • Absolute Excess Risk ~1% per year

Cases! Doctor didn't go through them!

Case 1:

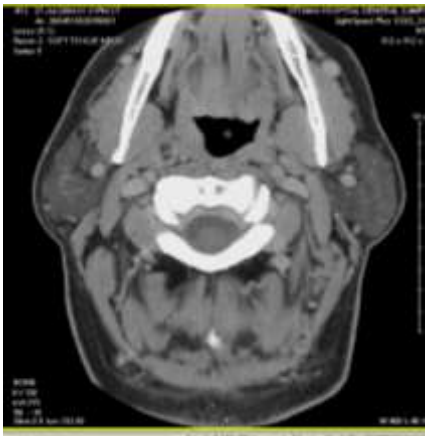
*Hx: A 52-y-o male with dysphagia.

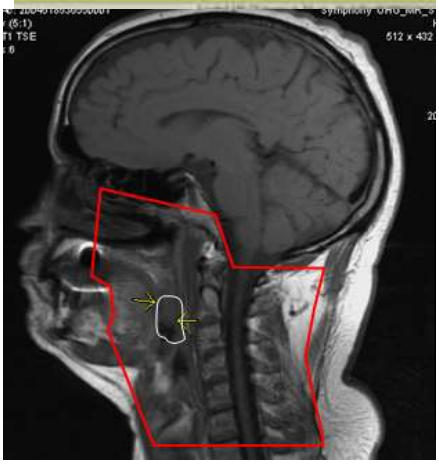
*PE: posterior oropharyngeal mass involving L tonsil, L base of tongue, crossing over midline to involve R base of tongue.

*Investigation: Biopsy: "large cell lymphoma of T-cell derivation with differential diagnosis between nasal type extranodal T-cell lymphoma, and peripheral T-cell lymphoma of unspecified type."

*General Principles of Answering Lymphoma Questions:

"First of all, I would take a complete history and perform a full physical examination…"





"The pathology should be reviewed by an experienced lymphoma pathologist…"
"This patient's management should be discussed in a multidisciplinary setting*…" At least by haematologist / medical oncologist and radiation oncologist.

*Aggressive:

- CT head, neck, thorax, abdo, pelvis
- MRI head & neck
- CBC, creatinine, LDH, liver enzymes
- Bone marrow aspiration & biopsy
- HIV testing
- Dental consult

*CT report: "nodular defect arising from posterior aspect of pharynx extending into tonsillar region…3.5 x 1.5 cm…also a prominent nodular structure extending through base of tongue 3.5 x 2.5 cm…. Non-specific cervical lymph nodes, the largest 11 mm…"
*No evidence of disease at other sites, normal lab work.
*CHOP x 3, Why not CHOP-R?
*Planning CT, Supine, in immobilization shell, GTV contoured "gross tumor volume"
*PTV "Planning Target Volume, RT" : **Waldeyer's Ring**. Lateral POP, 6 MV photons, compensators for dose homogeneity, 40 Gy / 20 / 4 wks.

R-CHOP :

Rituximab (Rituxan), **C**yclophosphamide, **H**ydroxyldaunorubicin (doxorubicin), **O**ncovin (vincristine), **P**rednisone

It is a first-line treatment for patients with diffuse large B-cell, CD20-positive, non-Hodgkin's lymphoma (DLBCL). Since then, R-CHOP has been used in the effective treatment of a wide range of B-cell NHL subtypes, including follicular lymphoma, mantle cell lymphoma, Burkitt's lymphoma, primary mediastinal large B-cell lymphoma, primary cutaneous B-cell lymphoma, and primary central nervous system lymphoma, to name a few. http://rchop.cancertreatment.net

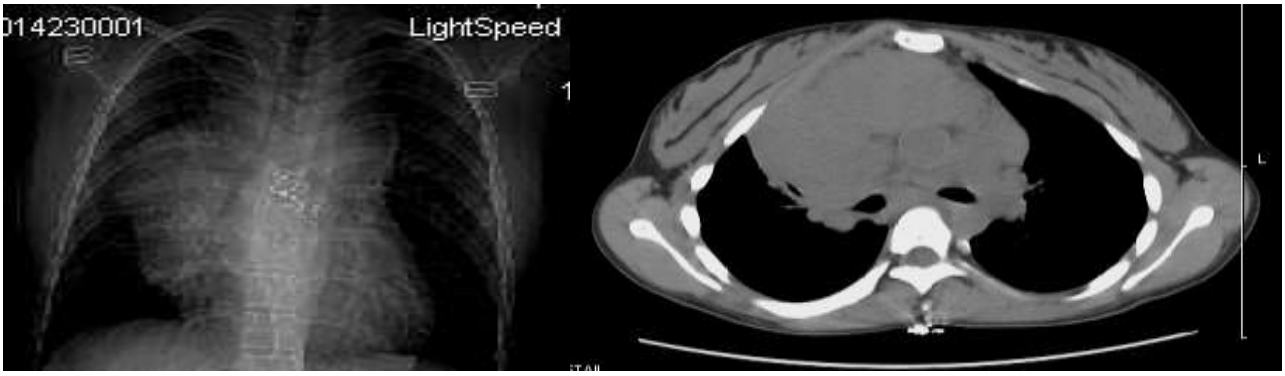
Waldeyer's Ring:

It is an incomplete ring of lymphoid tissue, situated in the naso-oropharynx, in 1884. The ring acts as a first line of defence against microbes that enters the body via the nasal and oral routes. Waldeyer's ring consists of four tonsillar structures (namely, the pharyngeal, tubal, palatine and lingual tonsils) as well as small collections of lymphatic tissue disbursed throughout the mucosal lining of the pharynx (mucosa-associated lymphoid tissue, MALT). https://www.kenhub.com/en/library/anatomy/waldeyers-ring

Case 2:

*Hx: A 31-y-o female with recent onset fatigue, night sweats, and mass in right neck
*Seen in ER, PE: R supraclavicular node ~2 cm
*Investigations: CXR: Huge ant mediastinal mass
*Biopsy: Nodular sclerosis type Hodgkin's disease
*CT Chest: "Large, lobulated mass in anterior mediastinum extending from suprasternal notch to cardiophrenic angle…also an enlarged subcarinal node…"
*Referral to Radiology-Oncology:

- History & Physical
- Pathology Review
- Discuss with Haematologist / Medical Oncologist
- CBC, ESR, creatinine, liver enzymes
- CT abdo-pelvis
- ^{67}Ga scan
- Bone marrow aspiration & biopsy



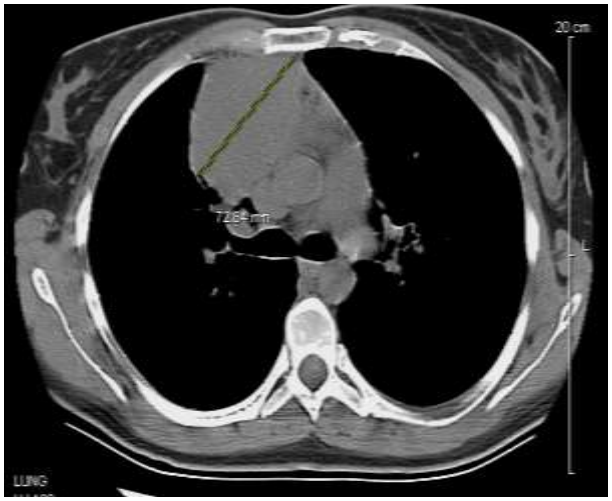
<u>*Hodgkin's Lymphoma, Nodular Sclerosis type, Stage IXB</u>

*ABVD x 8 cycles. But then, Residual 4 x 6 cm ant. Mediastinal mass!
*CT simulation. GTV contoured. CTV = entire mediastinum with 2 cm lateral margin. Move breasts out of field. 6 MV photons. AP POP. 35 Gy / 20 / 4 weeks. Shielding after 25 Gy to protect heart.

Case 3:

*Hx: A 26-y-o female with one year history of intermittent chest pain.
*Investigation: CXR: Anterior mediastinal mass
*CT: 6 x 7.5 cm anterior mediastinal mass. No other lymphadenopathy seen.
*Biopsy: Non-Hodgkin's Lymphoma, large cell type. Probably mediastinal sclerosing type.
*Referral to Radiology-Oncology:

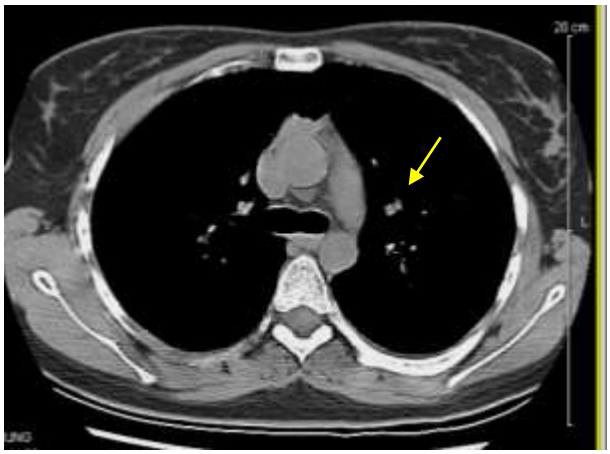
- History & Physical
- Pathology Review
- Discuss with Hematologist / Medical Oncologist



- CBC, ESR, creatinine, liver enzymes
- CT abdo-pelvis
- ^{67}Ga scan
- Bone marrow aspiration & biopsy

***Bulky disease on CXR. Stage IXA**

*CHOP x 6 cycles. Then, 2 x 0.9 cm residual mass!
*RT to mediastinum: 40 Gy / 20



Extra-notes from the doctor! important
Bone-marrow transplant:
2 types of bone-marrow transplant (NHL more than HL):-
1. Autologous: from the patient himself. This is when we are planning to give the patient high-dose chemotherapy; all cells may die because of this chemo, we take it before and store it and give it to him (This is called a rescue transplant).
2. Allogeneic: from another person (donor), in leukemia patients when the bone-marrow itself is diseased. It requires HLA compatible.

IMPORTANT NOTES FROM EXTERNAL RESOURCES

Notes

Davidson's	1-NHL represents a monoclonal proliferation of lymphoid cells of B cell (70%) or T cell (30%) origin 2-Hepatosplenomegaly may be present but does not always indicate disease 3-rituximab shown to induce durable clinical responses, and acts synergistically when given with chemotherapy. And it's recommended as a part of the first line therapy. 4-Low grade NHL has median survival of 10 years High grade with 5 years survival rTe ranges from 75% with low risk to and 25% with high risks 5-Lymphoma is 3 times higher in people with EBV 6-NHL is twice as common as HL 7-In high grade NHL BMT(bone marrow transplant) will increase survival with people under 65

Summary

Lymphomas are divided in 2 types: **HL** and **NHL** and they are neoplasm's that arise from lymphoid tissue with the age of 15-30 or >50

Risk factors: immune suppressant, EBV, HIV, autoimmune (SLE)

Diagnosis: core biopsy (for any lymph node >1cm for more than 4 weeks not related to an infection)

Symptoms: painless rubbery lymphadenopathy (symptoms may present by the compression of the mass e.g. dysphagia)

Treatment: depend on the staging and the Presence of high risks (B symptoms or bulky mass) S1-2 radio and we can add chemo S3-4 high chemo

Assessment: PET scan (better) or Ga scan

HL	NHL
Mostly arise from the lymphoid tissue of the lymph node	Mostly arise from the lymphoid tissue of the systemic structure e.g. GI lymphatic's
Hall mark is reed Sternberg cells	Various, but NOT Reed-Sternberg
Mostly good prognosis	Depend on the type
If there a residual of from disease we can use radio therapy	If there a residual of from disease we always use chemo

Approach to Lymphoma

Lymphoma

DIFFERENTIAL DIAGNOSIS OF THE MASS

INFECTIONS:

- BACTERIAL local infections, brucellosis, leptospirosis, lymphogranuloma venereum, typhoid fever
- ATYPICAL TB, syphilis, Lyme disease
- VIRAL HIV, EBV, HSV, CMV, HBV, mumps, measles, rubella, dengue fever
- FUNGAL histoplasmosis, coccidioidomycosis, cryptococcosis
- PARASITIC toxoplasmosis

NEOPLASTIC:

- LYMPHOMA Hodgkin's, non Hodgkin's
- LEUKEMIA
- METASTATIC CANCER
- LYMPHOPROLIFERATIVE Castleman's disease, angioimmunoblastic lymphadenopathy, autoimmune lymphoproliferative disease

INFLAMMATORY: RA, SLE, dermatomyositis, Still's disease, Churg Strauss syndrome

INFILTRATIVE: sarcoidosis, amyloidosis, histiocytosis, chronic granulomatous disease

CLINICAL FEATURES

SYMPTOMS:

MASS EFFECT lymphadenopathy (occipital, posterior auricular, preauricular, mandibular, sub mental, cervical, supra and infraclavicular, Waldeyer's ring (tonsils, base of tongue, nasopharynx), epitrochlear, axillary, inguinal, popliteal), hepatosplenomegaly, mediastinal/abdominal/pelvic/testicular/CNS masses may cause local destruction, obstruction, and compression

- HEMATOLOGIC: anemia, thrombocytopenia, lymphocytosis
- **CONSTITUTIONAL:** B symptoms specifically refer to weight loss >10% over 6 months, fever >388C [>100.48F], and drenching night sweats. Other constitutional symptoms include fatigue, anorexia, pruritus
- PARANEOPLASTIC SYNDROMES

NOTE: lymphoma can mimic many diseases. Always have a high index of suspicion for lymphoma, particularly if B symptoms or multisystem involvement

INVESTIGATIONS

BASIC

- **LABS**: CBCD, peripheral smear, lytes, urea, Cr, AST, ALT, ALP, bilirubin, Ca, LDH, ESR, albumin, quantitative immunoglobulin, serum protein electrophoresis, HCV, HBV, and HIV serology
- **IMAGING:** CXR, CT chest/abdomen/pelvis, PET scan
- **LYMPH NODE BIOPSY:** referral to surgery

SPECIAL

- **BONE MARROW BIOPSY**: if B symptoms, Hb <120 g/L [<12 g/dL] in women, Hb <130 g/L [<13 g/dL] in men, WBC <4_103/mL, platelets <125_103/mL

Questions

Q1: A 43-y-o female complains of fatigue and night sweat associated with itching for 2 months. On PE, there is diffuse non-tender lymphadenopathy, including small supraclavicular, epitrochlear and scalene lymph nodes. CBC and chemistry (including liver) are normal. Chest x-ray shows hilar lymphadenopathy. Which of the following is the best next step in evaluation?

A. Excisional lymph node biopsy

B. Toxoplasmosis IgG serology

C. Percutaneous aspiration biopsy of the largest lymph node

Q2: A 19-y-o female presented for evaluation of a non-tender left axillary lymph node. She is asymptomatic and denies weight loss or night sweat. PE reveals three rubbery firm non-tender nodes in the axilla, the largest 3 cm in diameter. Neither other lymphadenopathy nor splenomegaly. Lymph node biopsy reveals mixed cellularity HL. LFTs are normal. Which of the following is the best next step in evaluation?

A. Bone-marrow biopsy

B. Ct scan of the chest, abdomen and pelvis

C. ESR

D. Staging laparotomy

Q3: Which ONE of these is TRUE concerning the use of radiotherapy in Hodgkin's lymphoma?

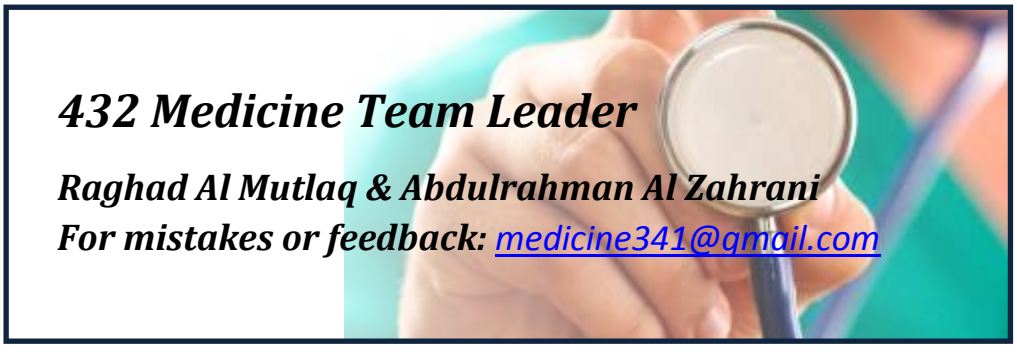
A. It is highly effective in curing early stage disease

B. It is less effective when used in combination with chemotherapy

C. Its use is often associated with the late development of mastitis

D. It is associated with bone marrow failure

Answers
Q1: A
Q2: B
Q3: A
Q1-2: From Pre-test Medicine book



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