

Lymphocytosis

Michelle Zhang, MD



Lymphocytosis

- $ALC > 4000$
- Reactive vs malignant
- Reactive lymphocytosis: various infections, autoimmune, hypersensitivity etc.
- Malignant lymphocytosis: lymphoid malignancies

Case 1

- 22 y.o. male who presents to the ED with a painful lump on the right side of his neck x 2 days
- Sore throat and fever started yesterday
- No nausea, vomiting, abdominal pain, malaise, or rash
- No sick contacts

<div> <div> <div>LABORATO...</div> <div> <div>BLOOD</div> <div>CHEMISTRY</div> <div>HEMATOL... ✓</div> <div>MICROBIO...</div> <div>INFECTIO...</div> </div> </div> <div> <div>RADIOLOGY...</div> <div>DIAGNOST...</div> </div> </div> <div> <div>Expand</div> <div>Collapse</div> </div> <div> <div>Filtered to:</div> <div> <div>X</div> <div>HEMATOLOGY</div> </div> <div> <div>Undo</div> <div>Reset t...</div> </div> </div> <div> <div>Not Resulted ⓘ</div> <div>All collected orders have been resulted</div> </div>	<div> <div><1m ago</div> <div> <div>☞</div> <div>☐</div> <div>☒</div> <div>⌂</div> <div>Time Mark</div> </div> <div> <div>☒</div> <div>⌂</div> </div> </div> <div> <div>☑ All Rows</div> <div>2023</div> <div>1/11/23</div> <div>10:42</div> </div> <div>CBC</div> <table> <tr><td>White Blood Cells</td><td>9.9</td></tr> <tr><td>Red Blood Cells</td><td>4.31</td></tr> <tr><td>Hemoglobin</td><td>13.2</td></tr> <tr><td>Hematocrit</td><td>40.2</td></tr> <tr><td>MCV</td><td>93.3</td></tr> <tr><td>MCH</td><td>30.6</td></tr> <tr><td>MCHC</td><td>32.8</td></tr> <tr><td>RDW</td><td>11.7</td></tr> <tr><td>Platelets</td><td>167</td></tr> <tr><td>Nucleated RBCs</td><td>0.0</td></tr> </table> <div>DIFFERENTIAL</div> <table> <tr><td>Differential Type</td><td>Manual</td></tr> <tr><td>Neutrophils %</td><td>28.7 ▼</td></tr> <tr><td>Lymphocytes %</td><td>20.1</td></tr> <tr><td>Variant Lymphocytes %</td><td>38.8 ▲</td></tr> <tr><td>Plasma Cell %</td><td>0.8 ▲</td></tr> <tr><td>Monocytes %</td><td>10.8</td></tr> <tr><td>Eosinophils %</td><td>0.0</td></tr> <tr><td>Basophils %</td><td>0.8</td></tr> <tr><td>Neutrophils, Absolute</td><td>2.83</td></tr> <tr><td>Lymphocytes, Absolute</td><td>1.98</td></tr> <tr><td>Variant Lymphocytes, Absolute</td><td>3.83 ▲</td></tr> <tr><td>Plasma Cell, Absolute</td><td>0.08 ▲</td></tr> <tr><td>Monocytes, Absolute</td><td>1.07 ▲</td></tr> <tr><td>Eosinophils, Absolute</td><td>0.00</td></tr> <tr><td>Basophils, Absolute</td><td>0.08</td></tr> <tr><td>WBC Morphology</td><td>abnormal !</td></tr> <tr><td>Vacuolated Granulocytes</td><td>1+ ▼</td></tr> </table>	White Blood Cells	9.9	Red Blood Cells	4.31	Hemoglobin	13.2	Hematocrit	40.2	MCV	93.3	MCH	30.6	MCHC	32.8	RDW	11.7	Platelets	167	Nucleated RBCs	0.0	Differential Type	Manual	Neutrophils %	28.7 ▼	Lymphocytes %	20.1	Variant Lymphocytes %	38.8 ▲	Plasma Cell %	0.8 ▲	Monocytes %	10.8	Eosinophils %	0.0	Basophils %	0.8	Neutrophils, Absolute	2.83	Lymphocytes, Absolute	1.98	Variant Lymphocytes, Absolute	3.83 ▲	Plasma Cell, Absolute	0.08 ▲	Monocytes, Absolute	1.07 ▲	Eosinophils, Absolute	0.00	Basophils, Absolute	0.08	WBC Morphology	abnormal !	Vacuolated Granulocytes	1+ ▼
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Results Review

Search 🔍

▼ LABORATO...

▼ BLOOD

▶ CHEMISTRY

▶ HEMATOL...

▶ MICROBIO...

▶ INFECTIO... ✓

▼ RADIOLOGY...

▶ DIAGNOST...

3m ago ☒ All Rows

🔧 ? 🖨️ ⌚ Time Mark

2023
1/11/23
10:42

BACTERIAL TESTS 🖨️ ⬆

Strep A Ag Negative

VIRAL TESTS 🖨️ ⬆

Infectious Mono **Positive !**

Blood findings with infectious etiologies

- Findings consistent with infectious mononucleosis
 - Differential with greater than 50% lymphocytes
 - Absolute lymphocyte count greater than 4500
 - Elevated lymphocyte count with greater than 10% atypical lymphocytes.
- It should be suspected in patients presenting with sore throat, fever, tonsillar enlargement, fatigue, lymphadenopathy, pharyngeal inflammation, and palatal petechiae.
- A heterophile antibody test is the best initial test for diagnosis of EBV infection
 - 71% to 90% accuracy for diagnosing IM.
 - 25% false-negative rate in the first week of illness.
 - IM is unlikely if the lymphocyte count is less than 4,000 mm³.

Fig. 1 **Reactive lymphocytosis**

- Wide range of lymphocyte morphologies within a given blood smear.
- More abundant cytoplasm (lower N:C ratio), more irregular nuclei, more open chromatin, +/- nucleoli.
- Some may be plasmacytoid.

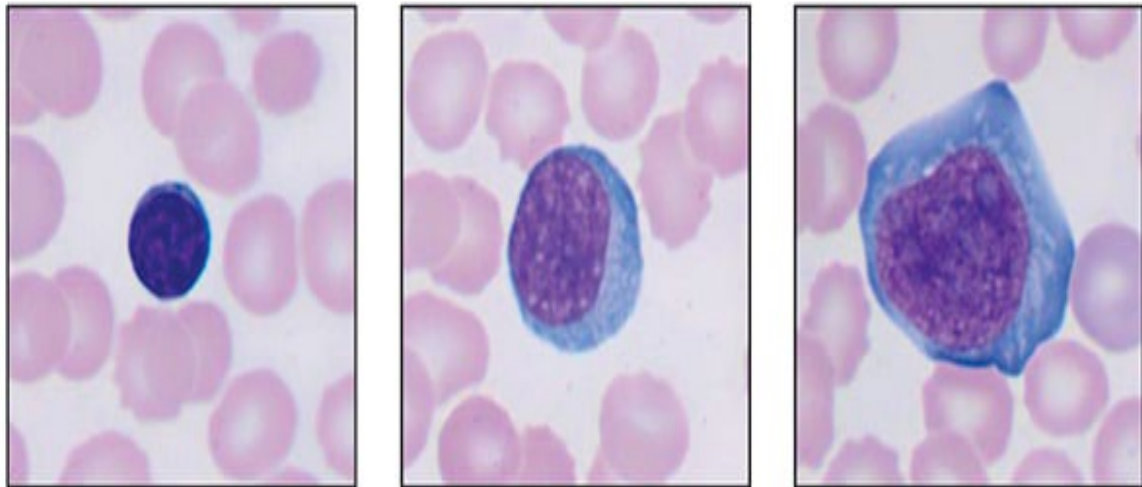
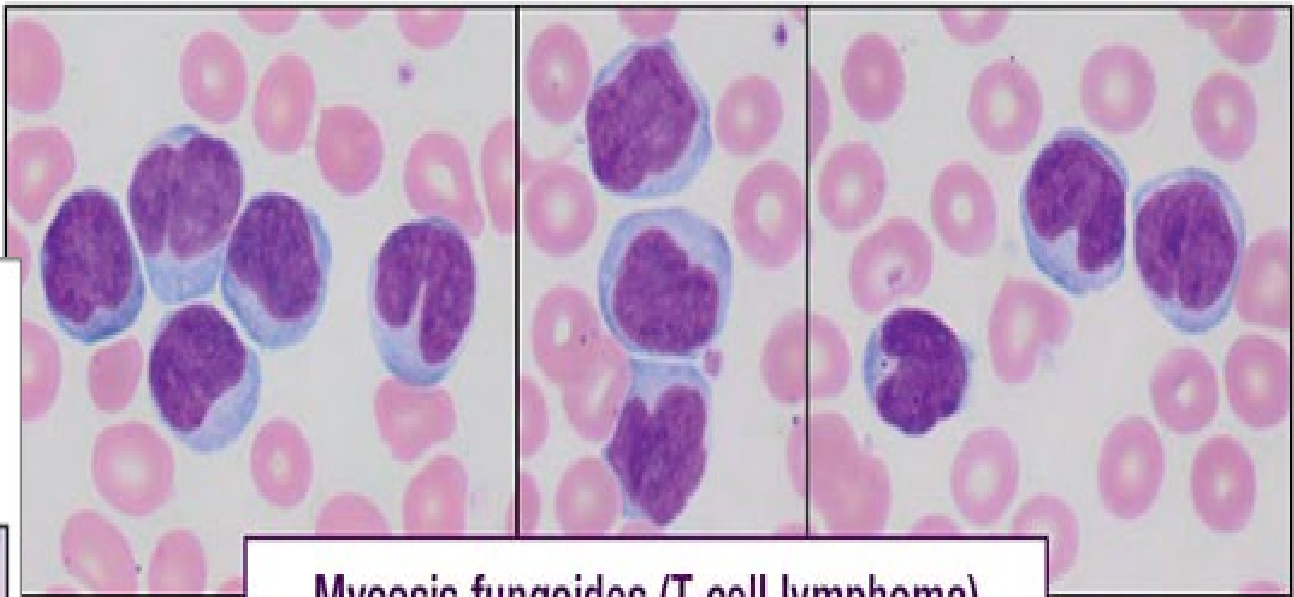


Fig. 2

Malignant lymphocytosis

- Often a monomorphic population.
- Atypical morphologic features: large cell size, blast-like chromatin, nuclear clefts, irregular nuclear contours, prominent nucleoli, cytoplasmic vacuoles.



Mycosis fungoides (T-cell lymphoma)

of Kyle Bradley, MD.

- 60yo female noted to have high white count on routine blood work
- Has occasional night sweats
- Has noted some fullness in the neck and under the arms
- No fever, chills,
- Has been maintaining weight
- Imaging shows splenomegaly and LAP in the neck and axilla
- Blood work shows

Results Review

Search	
LABORATO...	✓
BLOOD	✓
URINE	✓
BODY FLUI...	✓
MICROBIO...	✓
INFECTIO...	✓
RADIOLOGY...	✓
CT SCAN	✓
MRI	✓
CARDIOLOGY	✓
ECHO	✓
PATHOLOGY	✓
SURGICAL...	✓
Others	✓
OUTSIDE IMAG...	✓
OUTSIDE MAM...	✓
Creatinine, POCT	✓

Expand

Collapse All

Not Resulted ⓘ

All collected orders have

<1m ago

✓ All Rows

Time Mark

Oncology & ...

Oncology & ...

2023

3/10/23

11:26

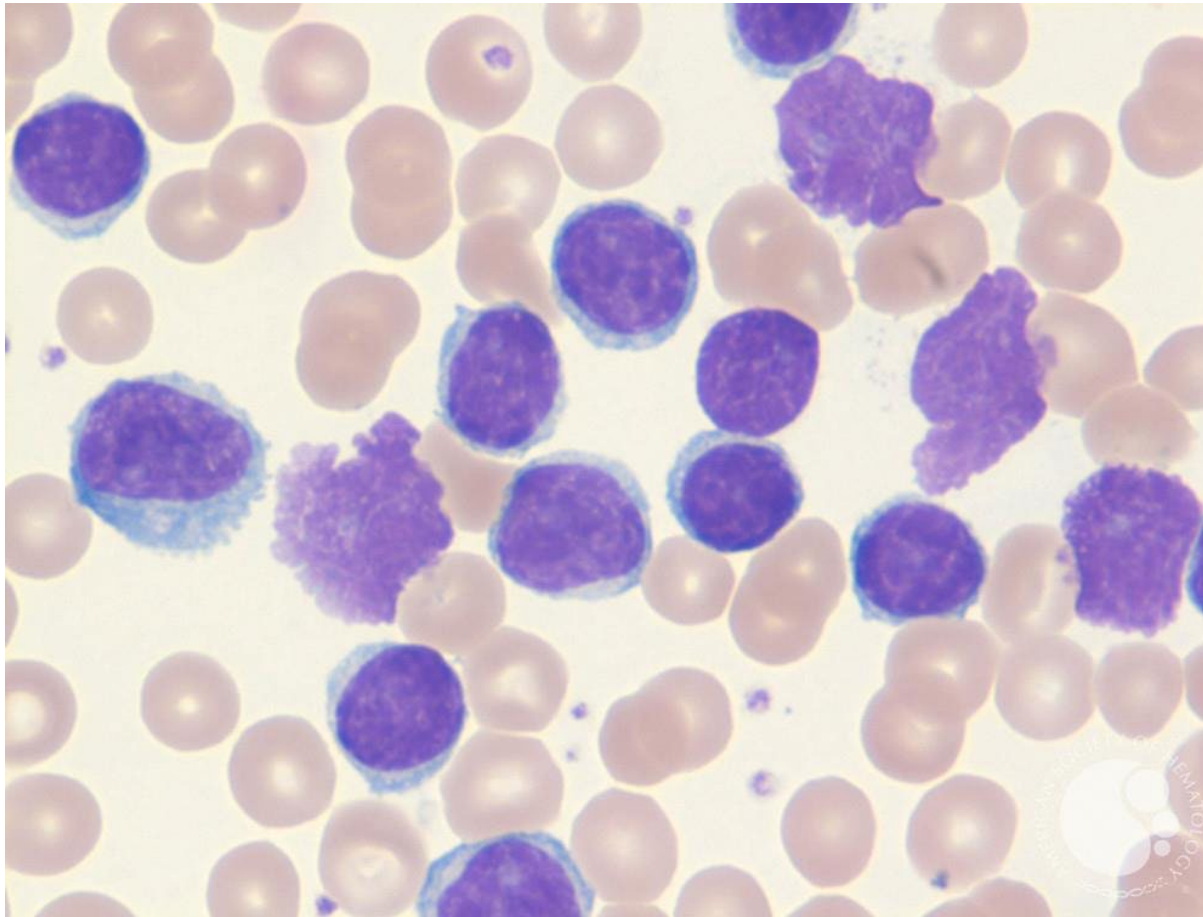
1/20/23

11:39

ALT	11	11
LDH	230 ^	238 ^
CBC		
White Blood Cells	138.7 ^	119.1 ^
Red Blood Cells	3.63 v	3.67 v
Hemoglobin	10.9 v	11.1 v
Hematocrit	36.5	37.5
MCV	100.6 ^	102.2 ^
MCH	30.0	30.2
MCHC	29.9 v	29.6 v
RDW	15.3	15.5
Platelets	116 v	117 v
Nucleated RBCs	0.1	0.1
DIFFERENTIAL		
Differential Type	Manual	Automated
Neutrophils %	2.3 v	2.9 v
Immature Granulocytes %		0.2
Lymphocytes %	85.2 ^	91.9 ^
Variant Lymphocytes %	7.0 ^	
Monocytes %	5.5	4.7
Eosinophils %	0.0	0.2
Basophils %	0.0	0.1
Neutrophils, Absolute	3.19	3.48
Immature Granulocytes, Abso...		0.23 ^
Lymphocytes, Absolute	118.16 ^	109.50 ^
Variant Lymphocytes, Absolute	9.71 ^	

ARE
Valley

Blood smear



Source: ASH image bank

WE ARE *Valley*

For additional reading

- <https://www.captodayonline.com/lymphocytosis-distinguishing-benign-from-malignant/>
- <https://www.ncbi.nlm.nih.gov/books/NBK549819/>

