Getting to Know WM: Basics & Beyond

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IWMF Global Educational Webinar 2020

Objectives

- Define WM
- Review incidence, possible risk factors and clinical presentation of WM
- Explain diagnosis, symptoms, and treatment guidelines
- Talk about MYD88 and CXCR4 (genetics)
- We are not really going to address treatment
- Have all of us reinforce what we know about WM and learn a few new things during this COVID-19 pandemic- including what to do about COVID-19

What is Waldenström's Macroglobulinemia?

- WM is a <u>blood cancer, a type of non-hodgkin lymphoma</u>
  - Occurs when blood cells called lymphocytes and plasma cells decide to break the rules that normally govern the behavior of cells and *both*:
    - reproduce out of control
    - don't die as normal cells do
  - WM cells make excess "antibodies" (always IgM), heavy proteins which can perpetrate problems
  - Named after Jan Waldenström – Swedish oncologist (first identified in 1944)

What is Waldenström's Macroglobulinemia? (cont)

- Rare cancer affecting 3 in 1 million/year
- 1500 new diagnoses in the U.S. each year
- Median age at diagnosis is 64
- 60% of patients are male
- More common in Caucasians than other ethnic groups
- Familial disposition present ~20% cases

What causes WM?

- Most cases are sporadic (occur by chance)
- I tell patients cause is usually “bad luck”
- Viet Nam veterans’ Agent Orange exposure
- About 20% are familial with at least 1 first degree relative with WM or another B cell disorder
- Main risk factor is the presence of IgM *MGUS*
- It is debatable to scientists, but not some personal injury attorneys, whether or not glyphosate (Roundup) causes LPL/WM

WM- Accurate Diagnosis: REAL/WHO definition

- In order to properly diagnose WM, patients must have a specific type of lymphoma- *Lymphoplasmacytic lymphoma (LPL) on a bone marrow biopsy AND*
  - IgM secretion
- Symptomatic vs. asymptomatic (smoldering)
  - Symptomatic needs to be treated
  - Asymptomatic should not be treated
- MGUS with IgM protein is a precursor state sometimes associated with peripheral neuropathy

WM: lymphocytes & plasma cells are both present

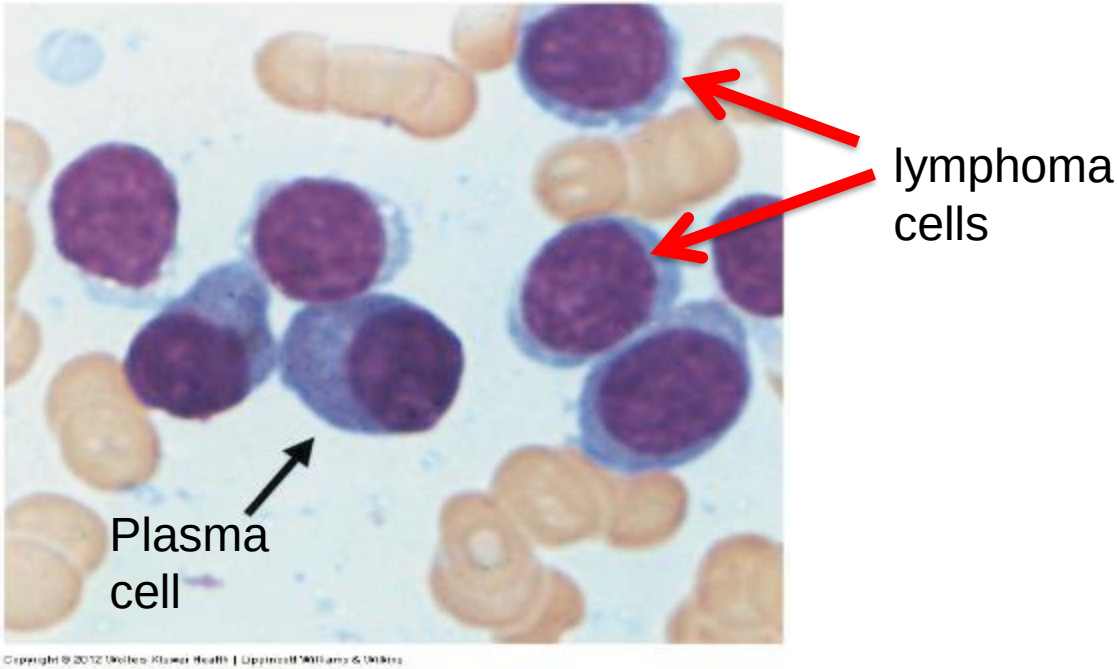
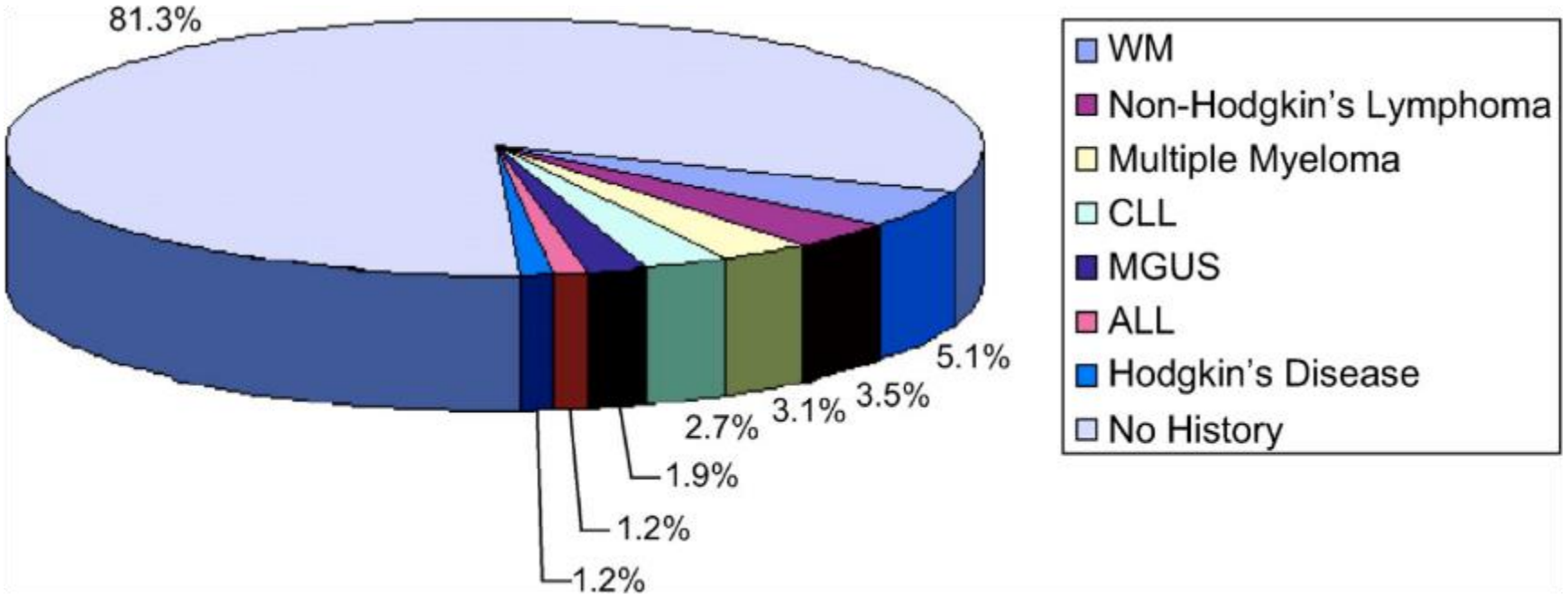


Figure 20.9 Waldenström. Bone marrow aspirate showing malignant cells with lymphoid and plasmacytoid morphology. (Reprinted with permission from Greer JP, et al. *Wintrobe's Clinical Hematology, 11th ed, Philadelphia, PA: Lippincott Williams &* Wilkins, 2004.)

WM patients often have relatives with WM or other related types of blood cancers



Reported history of B-cell blood cancers among 1st degree relatives of 257 pt with WM

Treon S P et al. Ann Oncol 2006;17:488-494

A Word on Familial WM (comes up every year)

- Leaders are Dr. Mary McMaster at the National Cancer Institute and Dr. Irene Ghobrial at the Dana Farber Cancer Institute
- Dr. McMaster- https://clinicaltrials.gov/ct2/show/NCT00039676?term=02-C-0210&rank=1
- Dr. Ghobrial- https://clinicaltrials.gov/ct2/show/NCT02269592

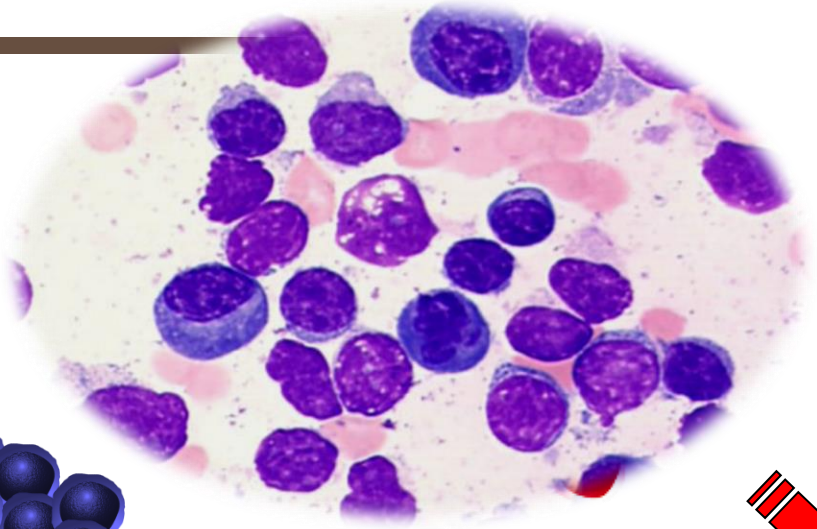
We do not recommend routine screening of family members for WM (Dr. Kyle says "there is no risk") - concept of relative risk versus absolute risk-that is, if your chance of getting WM is 3 times higher, it is 9 in a million, not 3.

LPL cells: in WM how do they misbehave?

- The lymphoma cells (LPL) can cause symptoms
- And/or
- The plasma cells make an abnormal type of antibody or immunoglobulin protein called IgM that can cause symptoms
- Rarely- the LPL cells, which are usually slow growing, can mutate and become fast growing- this is called "transformation"- this is a serious and potentially life-threatening change

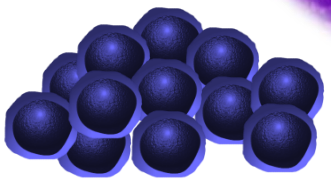
LPL Cells and/or the IgM can produce symptoms

Very low blood counts (anemia)



IgMs

Hyperviscosity Syndrome:
Epistaxis, Headache, Impaired vision
>4.0 CP



Adenopathy, splenomegaly
≤20%

Fatigue, Sweats

IgM Neuropathy (22%)
Cryoglobulinemia (10%)
Cold Agglutinemia (5%)

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Treon and Merlini, Williams Hematology 2011

The WM cells may try and overrun the normal healthy cells in the bone marrow, lymph nodes or spleen

- The LPL cells are clones of each other and try to take over the bone marrow
- We can tolerate a few weeds normally but if there are too many then we can develop symptoms

Disease = weeds

Remission = healthy flowers

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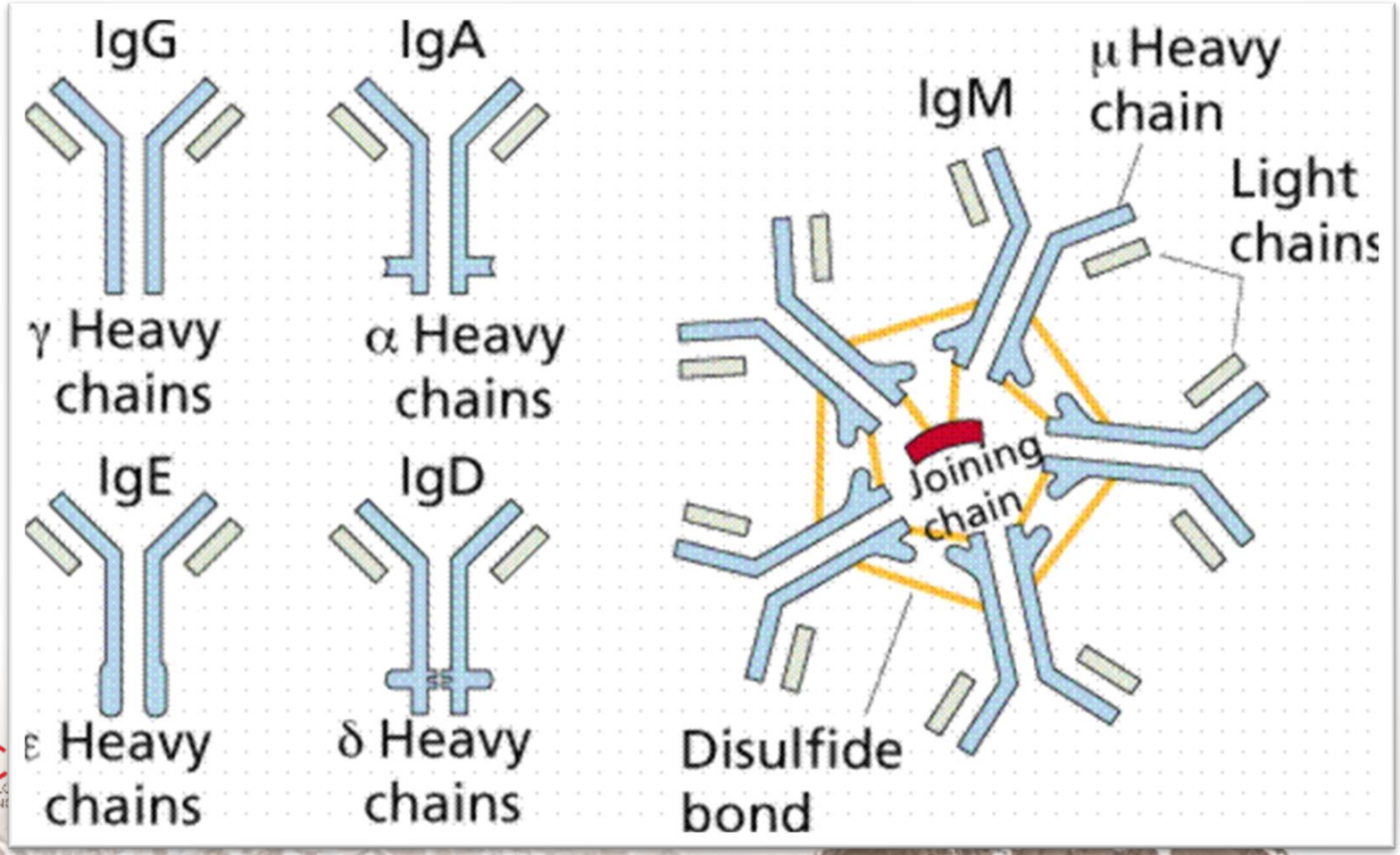
So what is this IgM all about?

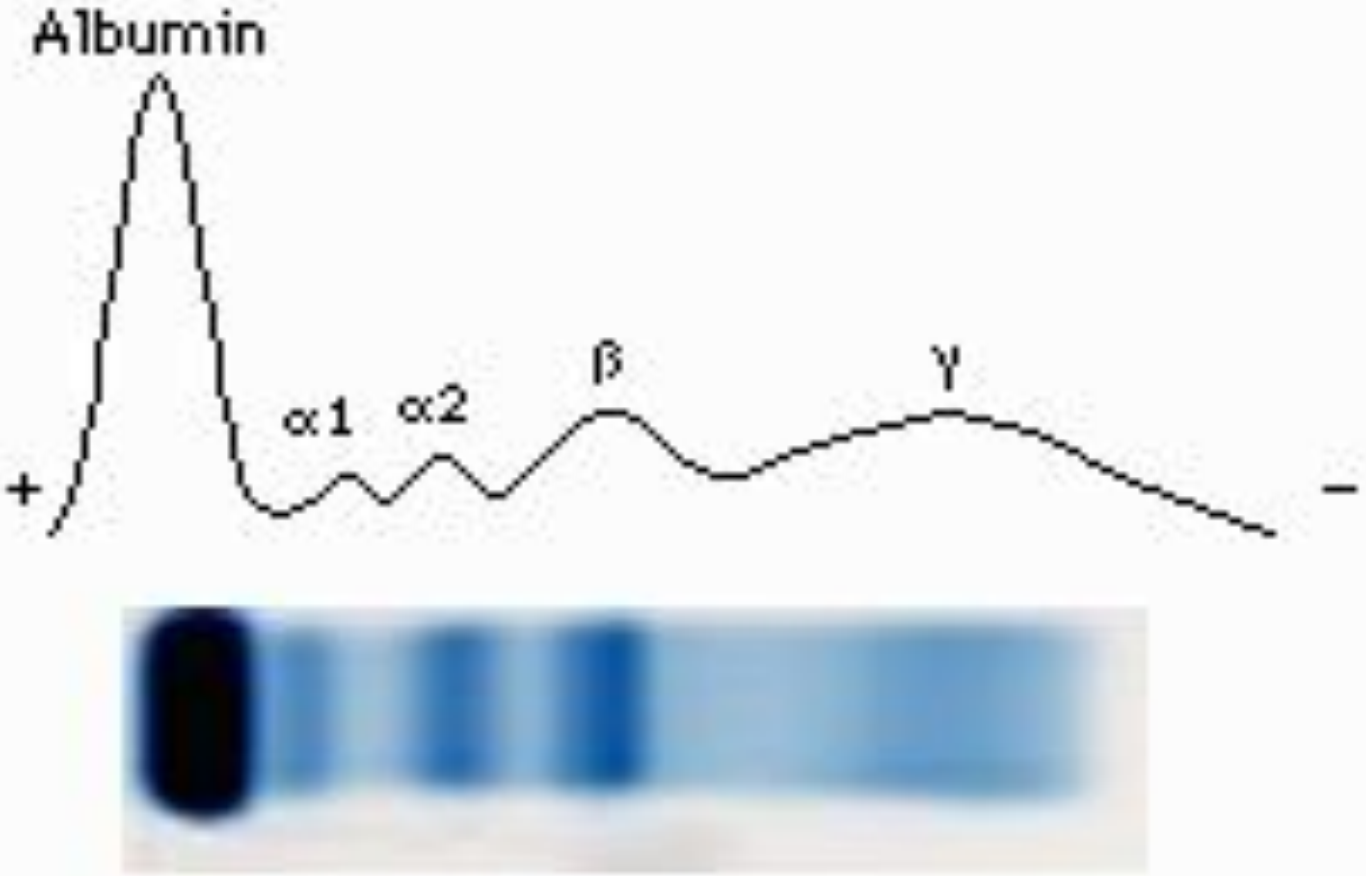
Immunoglobulin proteins (Ig's)/Antibodies are made up of heavy chains and light chains-normally they are part of our immune system- *IgM is different than the rest*



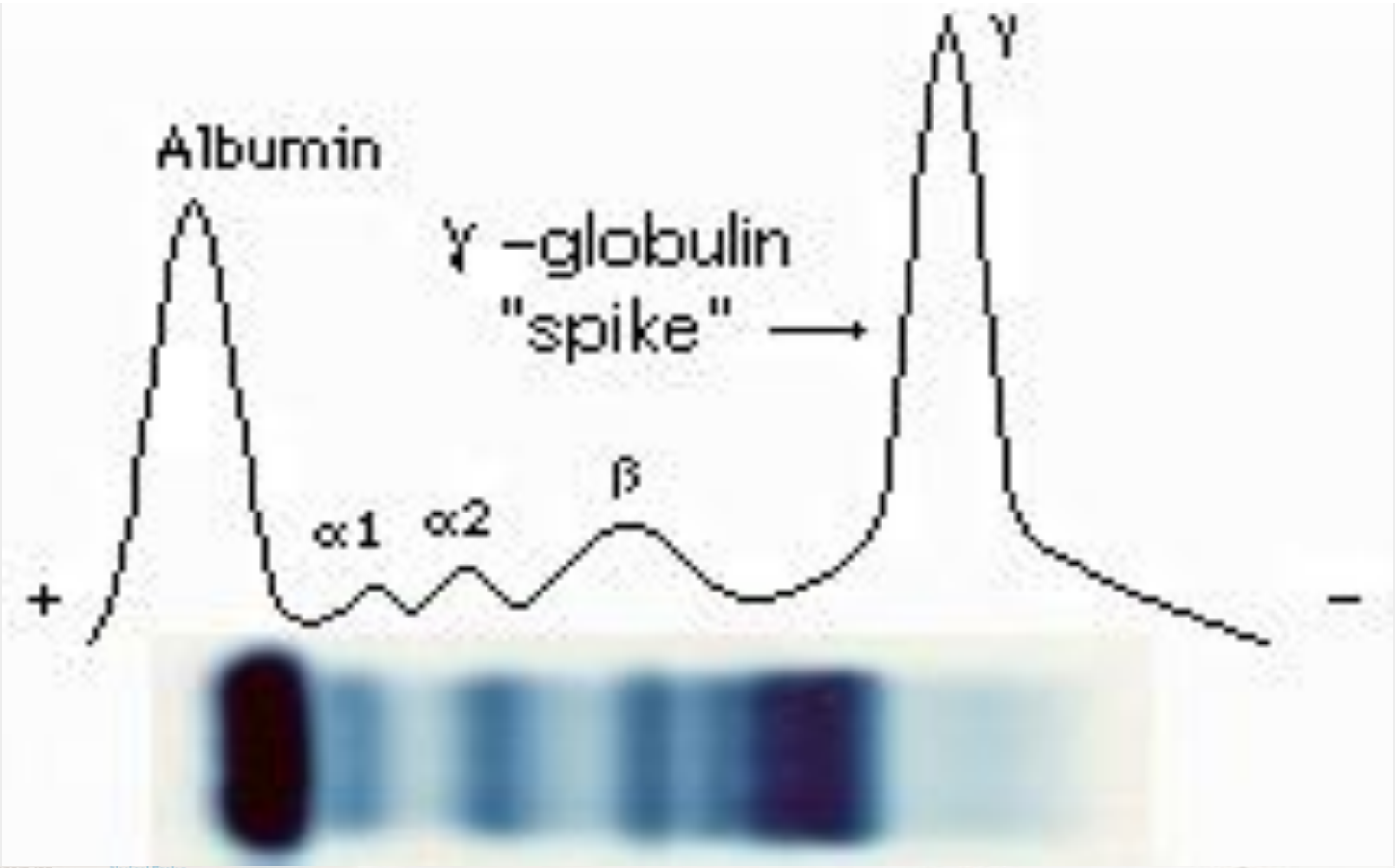
normally we have a nice mix of all different kinds of immunoglobulins- we call this ”polyclonal”

- In WM most of the IgM is completely identical, coming from clones of B cell/plasma cells
- We call this ”monoclonal”
- This can be detected on a blood test known as SPEP (serum protein electrophoresis), often ordered by a doctor who notices the protein levels are too high in the blood on routine testing
- The IgM level can be determined by two different blood tests: IgM or M spike

SPEP + M-protein (normal)
(serum protein electrophoresis + M)



SPEP + M-protein (abnormal) (serum protein electrophoresis + M)



QIgs – an important test for IgM (Quantitative Immunoglobulins)

- Measures the absolute number of IgM, IgG and IgA proteins
- In WM patients, IgM is HIGH and the other numbers are usually LOW
  - IgG (700-1600 MG/DL)
  - IgA (70-400 MG/DL)
  - IgM (40-230 MG/DL)
- Low numbers of IgA and IgG can lead to an increased risk of infection

WM occurs in phases: from MGUS to Smoldering to Symptomatic-

- There are strict definitions
  - IgM MGUS
  - Smoldering WM
  - Symptomatic WM
- We ONLY treat symptomatic WM

IgM Monoclonal Gammopathy of Undetermined Significance (MGUS)

Criteria

- Serum IgM monoclonal protein < 3.0 g/dL
- Bone marrow, lymphoplasmacytic infiltration <10%
- Absence of symptomatic anemia, lymphadenopathy, hepatosplenomegaly, or hyperviscosity
- Absence of constitutional symptoms

MAYO CLINIC Kyle et al., Sem. Oncol., 2003, 30:116

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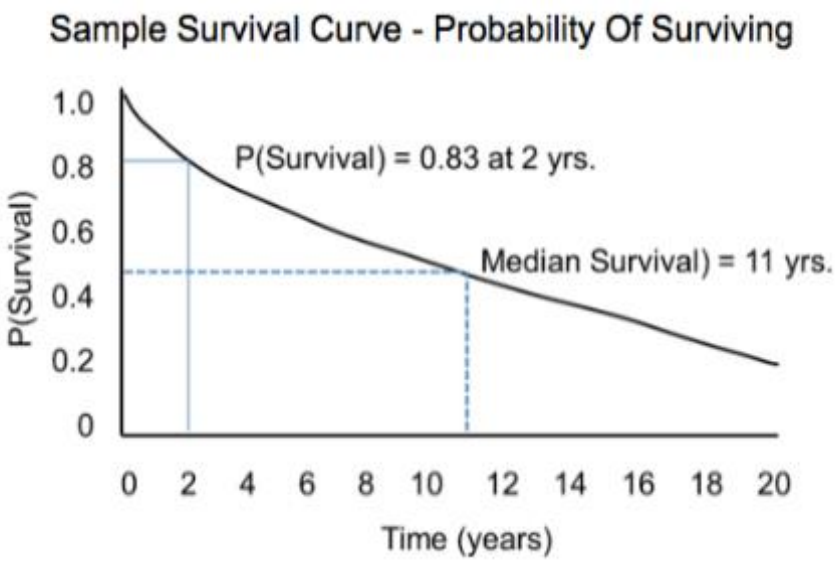
Chance of developing WM requiring treatment: 2%/year for first 10 years, then 1% thereafter

Oncospeak: Kaplan-Meier Curves: Doctors Always Show These



- Horizontal axis = time in years
- Vertical axis = probability of surviving or the proportion of people surviving
- At time zero everyone is alive
- The *probability* of survival is 83% at 2 yrs, 55% at 10 yrs, and the median survival is 11 yrs

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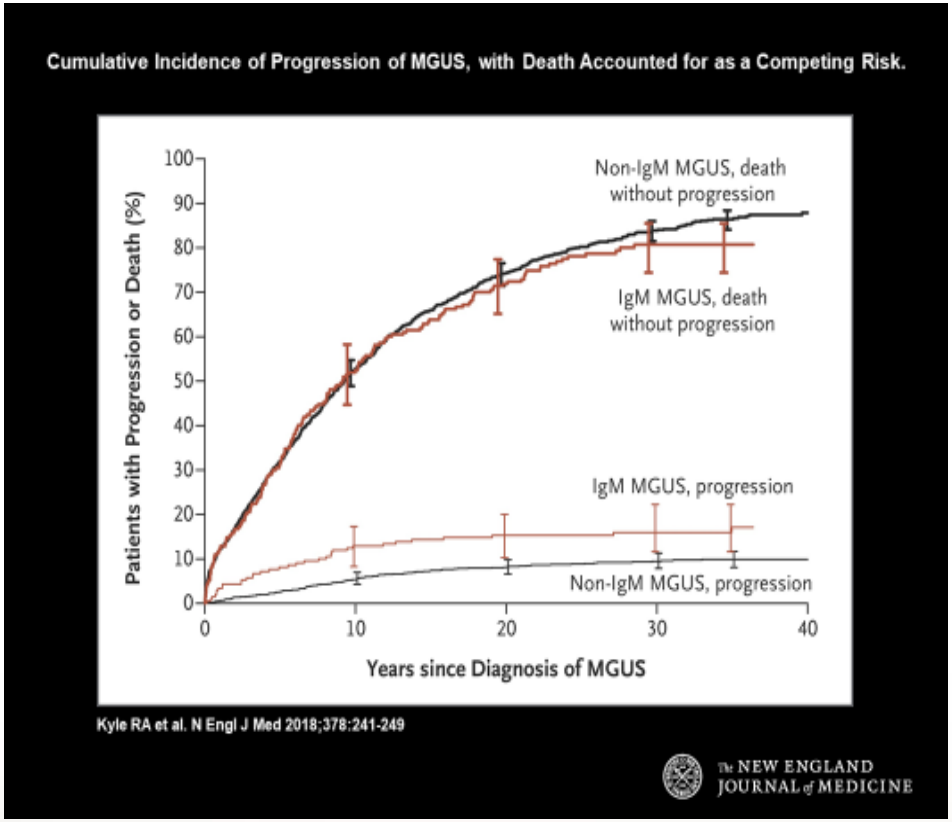
IgM MGUS- recent update by Dr. Kyle:

N Engl J Med 2018; 378:241-249 DOI: 10.1056/NEJMoa1709974

- Risk of progression 2% per year first 10 years, then 1% per year there after
- Increased risk with:
  - M spike > 1.5 g/dl
  - Abnormal free light chain ratio



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Some of you have IgM Neuropathy

- And often have IgM MGUS (low IgM levels)
- There are different kinds of IgM neuropathy
  - With or without anti MAG (myelin assoc. glycoprotein)
  - DADS- distal acquired demyelinating symmetric
  - With ganglioside antibodies (GM1)
- Above diagnoses overlap symptomatically
- The clinical course is variable
- Can be debilitating
- Treatment is variably effective

Smoldering Waldenström's Macroglobulinemia (SWM)

Criteria for Diagnosis

- Serum IgM monoclonal protein ≥ 3.0 g/dL and/or
- Bone marrow, lymphoplasmacytic infiltration ≥ 10%
- Absence of symptomatic anemia, lymphadenopathy, hepatosplenomegaly, or hyperviscosity
- Absence of constitutional symptoms

MAYO CLINIC Kyle et al., Blood 119:4462, 2012

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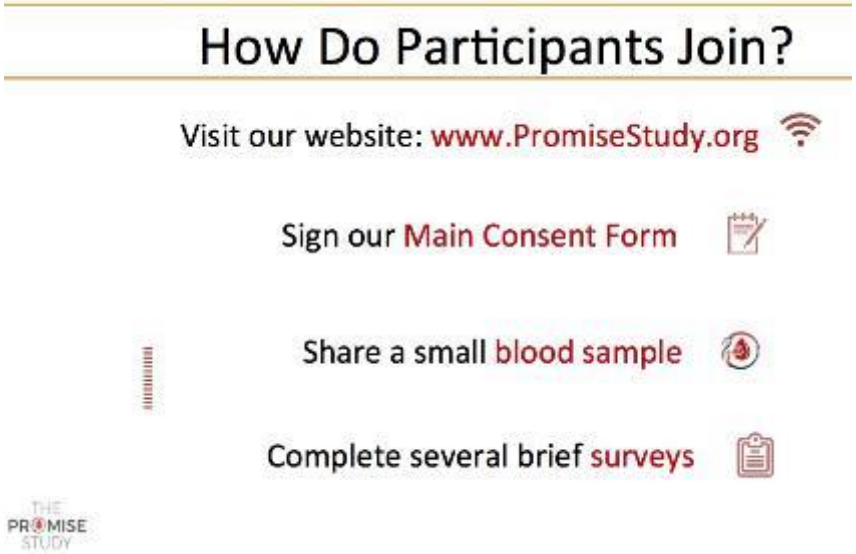
Risk of worsening to point where symptoms are present and treatment is needed: ~12%/yr, but risk lessens after 5-6 years

How does MGUS/Smoldering disease turn into symptomatic WM?

- Important research(Dr. Ghobrial and others) ongoing
- MYD88 mutation increases risk (virtually all have the mutation)
- Many more patients need to be studied
- Researchers want samples from patients
  - Example: PROMISE study for Dr. Ghobrial in Boston

Dr. Ghobrial's PROMISE study- it says MM (Myeloma) but WM patients can and should participate



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How do WM patients present to their doctors?

- They have symptoms or signs which make the doctor suspect it (we'll review these)

Or

- It is found incidentally by suspicious routine blood testing, often indicating either anemia or an overall increased level of protein in the blood

Protein, Total, Serum	**9.0**	**High**	g/dL	6.0 - 8.5	01
Albumin, Serum	4.2		g/dL	3.6 - 4.8	01
Globulin, Total	**4.8**	**High**	g/dL	1.5 - 4.5	
A/G Ratio	**0.9**	**Low**		1.2 - 2.2	

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The history and physical exam are important when evaluating you for WM- above all listening to the patient is the most important!

	Comments
Clinical evaluation	
History and physical examination	Headache, blurred vision: consider HVS
Familial history for WM and other B-cell lymphoproliferative disorders	Skin rash: cryoglobulinemia (palpable purpura), Schnitzler syndrome (urticaria, bone pain, fever)
Review of systems for the presence of B symptoms, organomegaly, hyperviscosity symptoms, neuropathy, Raynaud's disease, rash, peripheral edema, skin abnormalities, dyspnea	Symptoms of peripheral neuropathy: consider neurologist consultation
Funduscopic examination by an experienced ophthalmologist if IgM is high (ie, >3000 mg/dL) or hyperviscosity is suspected; photographic documentation may be useful for appreciation of future changes	Dyspnea, edema: consider amyloidosis

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Meletios A. Dimopoulos,Efstathios Kastritis, How I treat Waldenström macroglobulinemia, Blood, 2019,

What tests do we perform in a patient suspected of having WM?

- Blood work
- Urine test (looking for amyloid* or other rare kidney issues)
- Bone marrow biopsy with MYD88 testing
- Sometimes CT or CTPET scans

- Again the most important: talk to the patient!

*amyloidosis is beyond the scope of this talk but there are two great issues of the TORCH by Drs. Gertz & Merlini about this

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Required to Properly diagnose WM

- A bone marrow biopsy MUST be done and show a type of non-hodgkin lymphoma called LPL
- There MUST be monoclonal IgM in the blood

- Now in newly diagnosed patients testing for a mutation in the LPL cells called MYD88, and sometimes a less common one called CXCR4

Optional tests in WM patients

Optional tests, if clinically indicated	
In case of Raynaud's, renal dysfunction, hematuria, skin rash, hyperviscosity consider evaluation for cryoglobulins	Cryoglobulins may require special communication with the laboratory
Hemolysis, hyperviscosity: consider cold agglutinin titer	In the presence of cryoglobulins, the assessment of IgM and response may be challenging
Serum viscosity (not always correlated with symptoms)	
Bleeding diathesis with prolonged aPTT and PT: screening for acquired von Willebrand disease	
Suspicion of amyloidosis: 24-hour urine protein quantification, Serum FLCs, NTproBNP, Cardiac troponins	
Symptoms of peripheral neuropathy are reported: nerve conduction studies, myelin-associated globulin antibodies, anti-ganglioside M1, other antibodies (consultation with neurologist strongly advised)	
Central nervous system symptoms: consider Bing-Neel syndrome, brain/spine magnetic resonance imaging, cerebrospinal fluid testing (also for MYD88L265P)	
Renal dysfunction: consider renal biopsy if indicated. Several renal pathologies have been described such as amyloidosis, cryoglobulinemic glomerulonephritis, immunoglobulin deposition disease, cast nephropathy, etc[21,22]	

Meletios A. Dimopoulos,Efstathios Kastritis, How I treat Waldenström macroglobulinemia, Blood, 2019,

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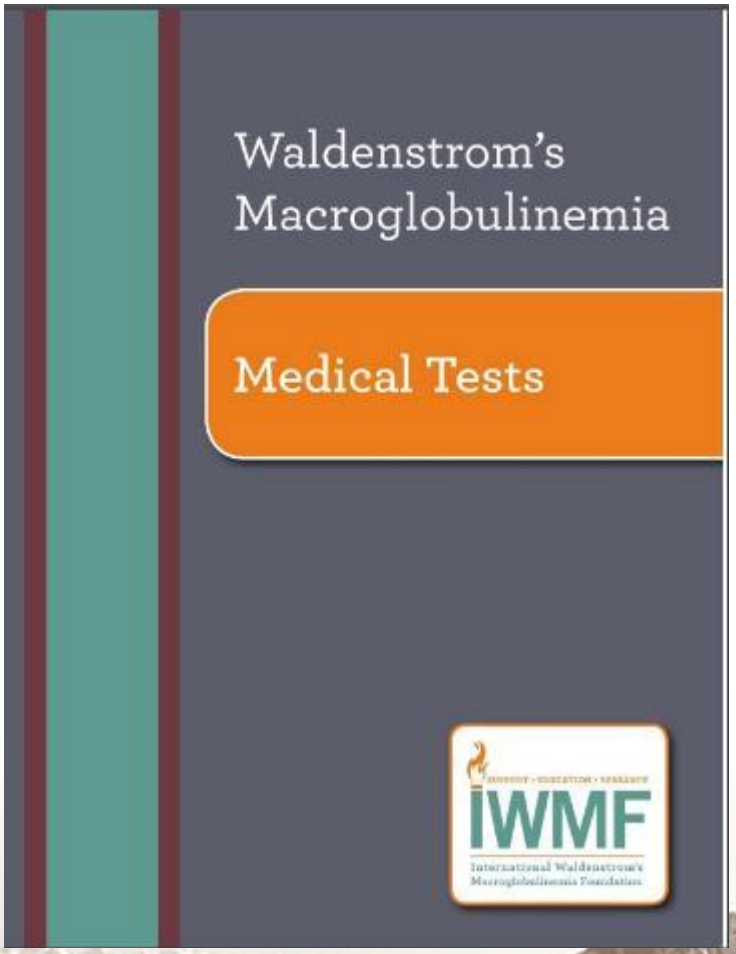
An Important Resource for Understanding Blood Tests in WM



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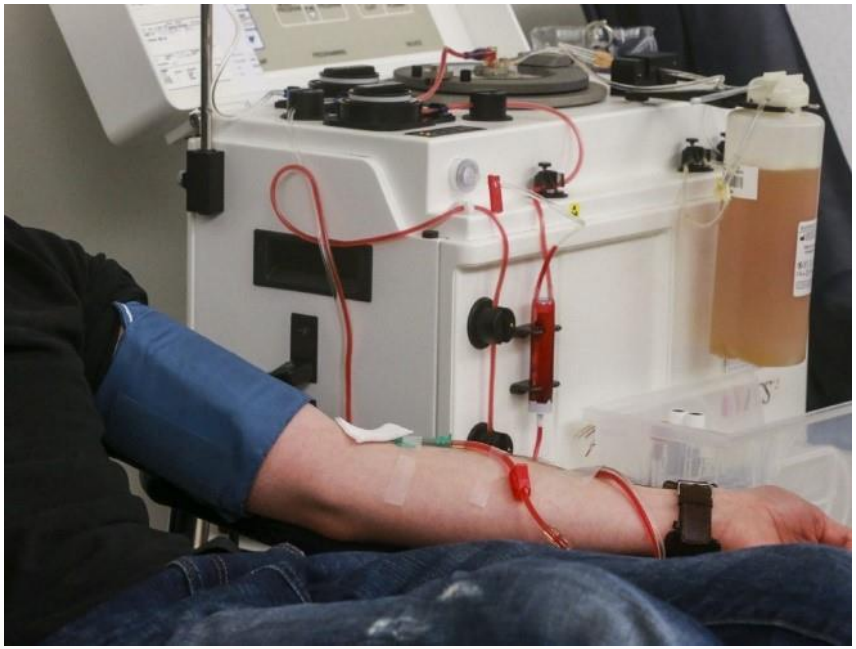
Hyperviscosity Syndrome (HVS)

- Measures the resistance of fluid to flow
  - Water flows readily, less viscous = “thin”
  - Oil flows less readily, more viscous = “thick”

- IgM proteins make the blood more viscous
  - Can be mild and not cause symptoms
  - Or can thicken the blood causing headaches, nosebleeds, vision changes, or serious medical problems
  - May need plasmapheresis to remove IgM and then treat underlying production

Plasmapheresis



WM can sometimes affect the central nervous system- “Bing-Neel Syndrome”

- Rare
- Can occur at any time point
- Symptoms variable
- Can occur even when the WM does not otherwise appear to be worsening or even it is improving on treatment
- To diagnose: start with contrast MRI, then biopsy best or special testing of spinal fluid (MYD88 testing, flow cytometry)

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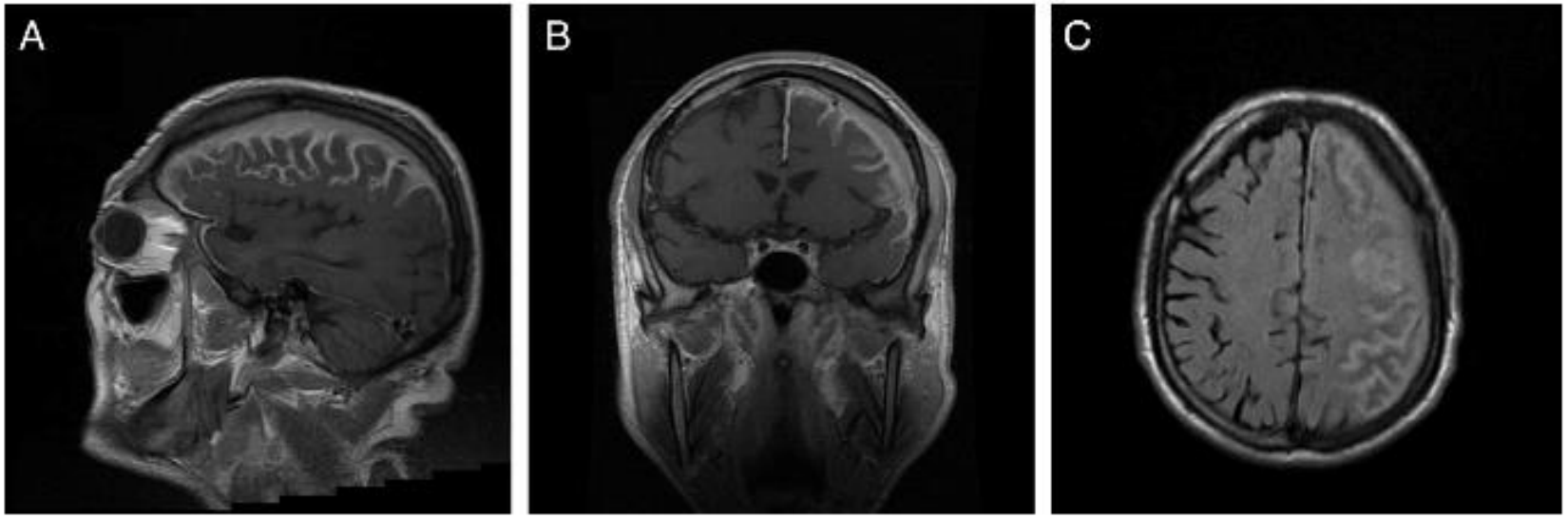
Bing Neel Syndrome



Important: WM is different in everybody

- Your course will be just that, unique to you
  - Symptoms
  - How you respond to treatment
  - Which treatment(s) may be right for you

- There is great information for WM patients from IWMF and forums such as this one, but remember, one's person's experience may not be yours

Prognosis: WM docs try and predict it using various models.

Table 1 Clinical Prognostic Models for Patients with Waldenstrom's Macroglobulinemia (WM).

	IPSS-WM[a5]	SWOG [27]	Mayo Clinic [29]	French Group [30]
Number of patients	587	231	337	318
Variables/risk factors	• Age > 65 years • Hemoglobin ≤ 11.5 g/dL • Platelets ≤ 100 × 10^9/L • β2M > 3 mg/L • Serum IgM > 7 g/dL	• β2M • Hemoglobin level • IgM level	• Age > 65 years • Presence of organomegaly • β2M	• Age ≥ 65 years • Serum albumin < 4 g/dL • Presence of ≥ 1 cytopenias
High risk criteria	>3 adverse risk factors	β2M ≥ 3 mg/L and IgM ≥ 4 g/dL	Presence of both risk factors and β2M ≥ 4 mg/L	Presence of all 3 adverse risk factors
Survival outcome for high risk disease	5-year OS: 36%	5-year OS: 21%	10-year OS: 5%	5-year OS: 25%

Note. β2M = beta-2-microglobulin; IgM = immunoglobulin M; IPSS-WM = International Prognostic Staging System for WM; LDH = lactate dehydrogenase; OS = overall survival; SWOG = Southwest Oncology Group.
[a]Modified IPSS-WM as reported by Kastritis et al. [25] also includes LDH as a variable/adverse risk factor.

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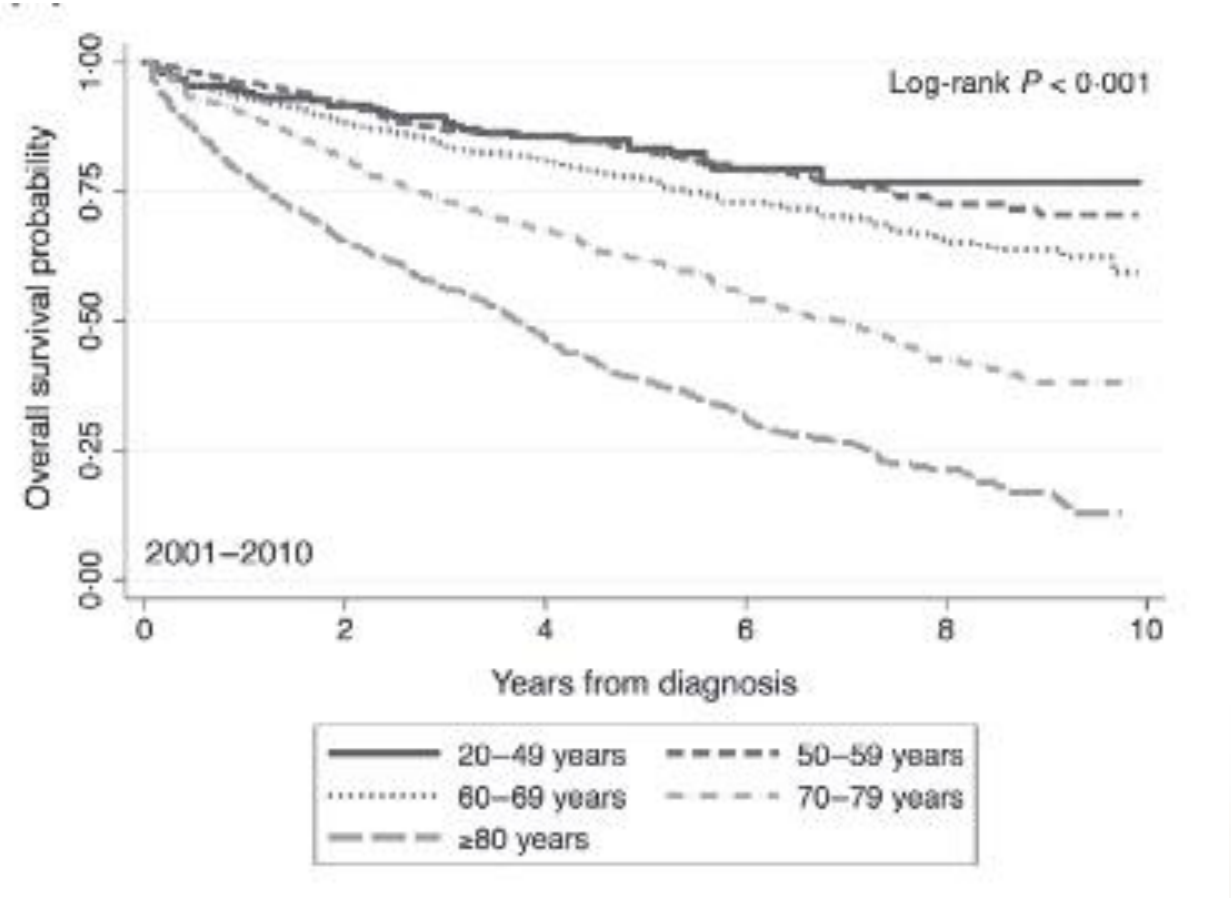
Advani et al 2019: Hematol Oncol Stem Cell Ther 12 (2019) 179–188

Survival: it is long. Data can be challenging. Here is for patients diagnosed between 2001-2010 (as of 2014)



Castillo et al BJH 2014

Treatment- doc's perspective

- Important to define the goals of treatment
- Is my patient young/vigorous or old/frail?
- Am I interested in just making my patient feel better (symptoms, fix anemia) or do I believe that the deepest, best remission possible is important?
- Is my patient interested in fixed duration therapy (months, maybe a few years if maintenance) or continuous therapy (take treatment until side effects or relapse dictate otherwise)?
- Am I worried about long term side effects of certain chemotherapy drugs (e.g., neuropathy from bortezomib or marrow damage from bendamustine)?
- Does cost come into the discussion?
- Does mutational status (MYD88, CXCR4) make a difference?
- Do we need rapid control of disease and symptoms?
- Is there underlying neuropathy before treatment?

Consensus panel recommendations for initiation of therapy in WM.

- A high IgM level is not by itself an indication to initiate therapy. However, IgM Levels above 6,000 are often associated with HVS
- Hematocrit <30; Platelet count <100,000.
- Alleviate symptoms attributable to WM.
- Symptomatic Hyperviscosity (>4.0 CP).
- Moderate-Severe Neuropathies.
- Symptomatic cryoglobulinemia, cold agglutinin disease.

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Semin Oncol 30: 116, 2003
Castillo ASH 2016

Reasons to treat WM based on lab tests

Laboratory indications for initiation of therapy
Symptomatic cryoglobulinemia
Symptomatic cold agglutinin anemia
Autoimmune hemolytic anemia and/or thrombocytopenia
Nephropathy that is related to WM
Amyloidosis that is related to WM
Hemoglobin ≤10 g/dL
Platelet count $<100 \times 10^9$/L

Indications to start therapy are according to consensus criteria first published by Kyle et al[31] and further confirmed in 2019[98] and in 2016.[32]

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Meletios A. Dimopoulos,Efstathios Kastritis, How I treat Waldenström macroglobulinemia, Blood, 2019,

Reasons to treat WM based on symptoms

Clinical indications for initiation of therapy
Recurrent fever, night sweats, weight loss, fatigue
Hyperviscosity
Lymphadenopathy: either symptomatic or bulky (≥5 cm in maximum diameter)
Symptomatic hepatomegaly and/or splenomegaly
Symptomatic organomegaly and/or organ or tissue infiltration
Peripheral neuropathy because of WM

Meletios A. Dimopoulos,Efstathios Kastritis, How I treat Waldenström macroglobulinemia, Blood, 2019,

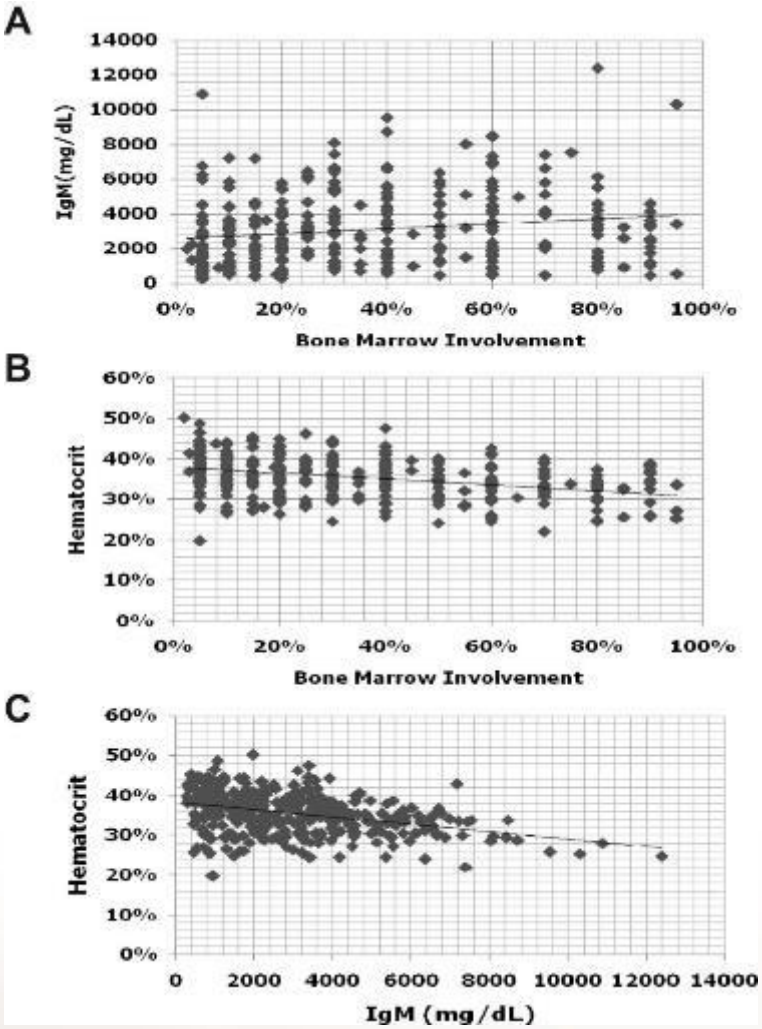
Very important

- The level of IgM and/or the percentage of LPL (WM) cells in the bone marrow varies tremendously between WM patients
- Some patients with very low IgM levels have lots of symptoms while others with very high levels may not have symptoms at all!

blood
JOURNAL OF THE AMERICAN SOCIETY OF HEMATOLOGY

What on earth does this mean?
This demonstrates how the level of IgM, degree of anemia, and # of LPL cells in the marrow vary TREMENDOUSLY between patients

Don't worry! I'll walk you through this



Treon, S. P. Blood 2009;114:2375-2385

We need to learn about mutations in 2020

- We are talking about genetic mutations (changes in the DNA) inside the blood cells that are acquired- you were not born with them nor can you pass them on (SOMATIC)
- The 2 big ones in WM are MYD88 and CXCR4
- We are learning that these mutations influence how the WM might behave clinically as well as respond to certain treatments
- MYD88 is almost always one specific mutation (L265P)and is present in over 90% of WM patients- testing common
- CXCR4- many different mutations present in about 40% of WM patients- tested less often- CXCR4 testing is more challenging technically and not all docs order it

This was a major breakthrough in WM- finding a genetic mutation picked up by chance during life which has major role in the development of WM

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

MYD88 L265P Somatic Mutation in Waldenström's Macroglobulinemia

Steven P. Treon, M.D., Ph.D., Lian Xu, M.S., Guang Yang, Ph.D., Yangsheng Zhou, M.D., Ph.D., Xia Liu, M.D., Yang Cao, M.D., Patricia Sheehy, N.P., Robert J. Manning, B.S., Christopher J. Patterson, M.A., Christina Tripsas, M.A., Luca Arcaini, M.D., Geraldine S. Pinkus, M.D., Scott J. Rodig, M.D., Ph.D., Aliyah R. Sohani, M.D., Nancy Lee Harris, M.D., Jason M. Laramie, Ph.D., Donald A. Skifter, Ph.D., Stephen E. Lincoln, Ph.D., and Zachary R. Hunter, M.A.

There are many more types of CXCR4 mutations compared to MYD88

Over 30 types of CXCR4 C-terminal somatic mutations in WM

N=	MYD88 Status	CXCR4 Mutation	Nucleotide change	Amino acid change
1	L265P	Nonsense	r.997 A>T[1]	K333X[1]
3	L265P	Nonsense	r.1000C>T	[illegible]
7	L265P	Nonsense	r.1013C>A	S338X
15	L265P	Nonsense	r.1013C>G[2]	S338X[2]
1	WT	Frameshift	r.931_933insT	[illegible]
3	L265P	Frameshift	r.952_954insA	T318fs
2	L265P	Frameshift	r.951_953delACCTC	T318fs
1	L265P	Frameshift	r.954_956insC	S319fs
1	L265P	Frameshift	r.958_960delTG	V320fs
1	L265P	Frameshift	r.963_965insC	R322fs
1	L265P	Frameshift	r.969_971insG	S324fs
1	L265P	Frameshift	r.978_980insT	K327fs
1	L265P	Frameshift	r.984_986insT	L329fs
1	L265P	Frameshift	r.993_995insA	G332fs
1	L265P	Frameshift	r.1005_1007insT	G336fs
2	L265P	Frameshift	r.1013_1015delATCT	S338fs
1	L265P	Frameshift	r.1013_1015delATCTGTTTCCACTGAGT	S338fs
3	L265P	Frameshift	r.1012_1014insT	S338fs
1	L265P	Frameshift	r.1015_1017delCT	S339fs
1	L265P	Frameshift	r.1020_1022delT	S341fs
1	L265P	Frameshift	r.1024_1026delCT	S342fs
1	L265P	Frameshift	r.1030_1041CTGAGTCTTC>GT	S344fs
1	L265P	Frameshift	r.1033_1035delAG	E345fs

@50%

Sanger Sequencing of CD19-sorted BM cells Treon et al, Blood 2014

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More oncospeak- you'll need to know this to be proficient in WM!

- RR- response rate (% of patients who had at least a 50% reduction in measurable WM)
- PFS- progression free survival- how long patients went before a relapse or dying
- OS- overall survival- just what it says
- Wild type (WT)- UNMUTATED gene, applied to MYD88/CXCR4. This is the opposite of MUTATED (MUT)
- Mutated CXCR4 a.k.a. "WHIM"
- Mutated MYD88 a.k.a. "L265P"
- Mutations in CXCR4 can be "nonsense" or "frameshift" types

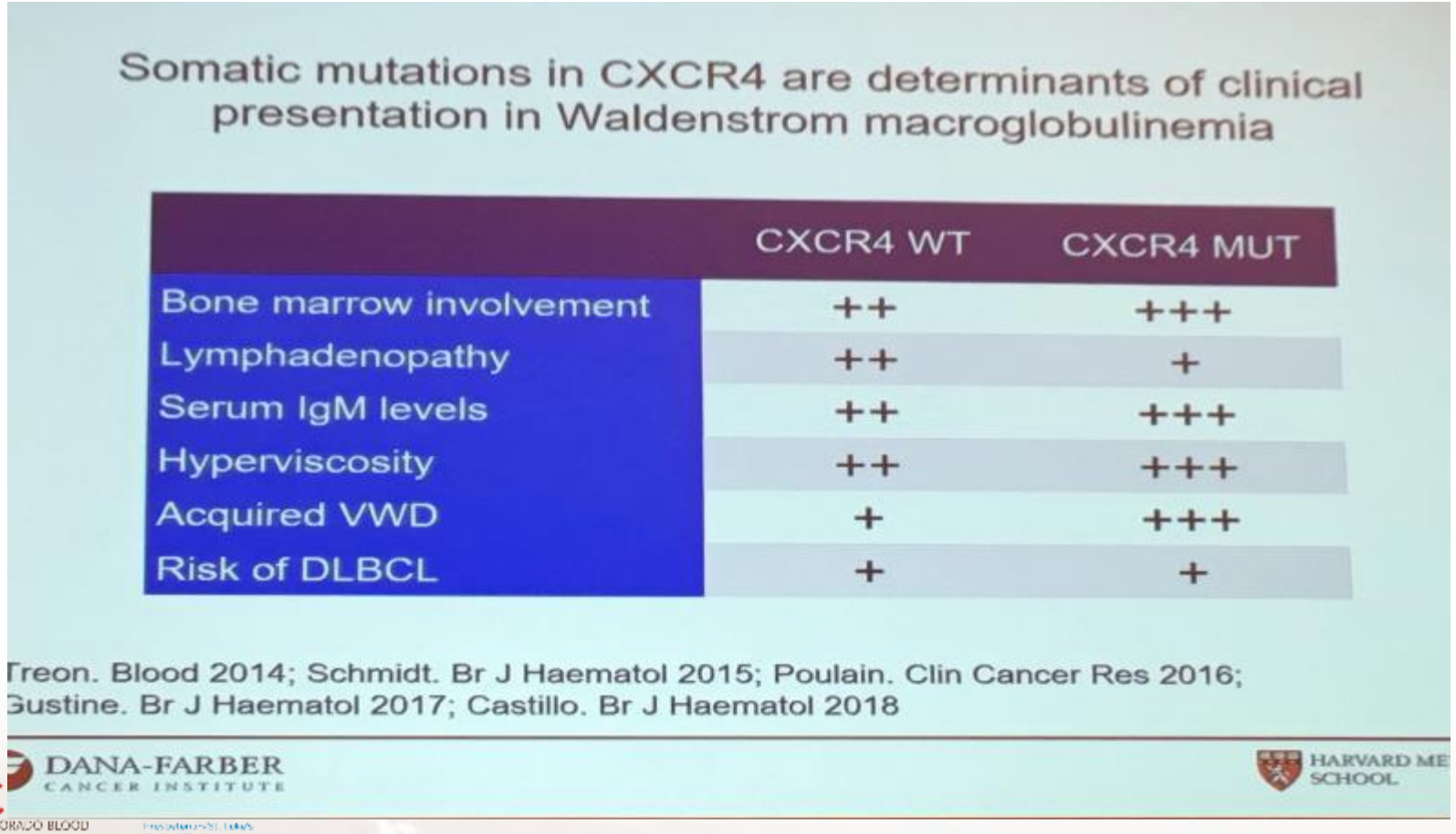
How does MYD88/CXCR4 testing help distinguish between different diseases?

Frequency of *MYD88* and *CXCR4* Mutations in Patients With B-Cell Malignancies

	Total Patients, n	*MYD88*^{L265P}	*CXCR4*^{WHIM}
Healthy donors	32	0%	0%
IgM MGUS	12	50%	17%
Non-IgM MGUS	7	0%	0%
Untreated WM	102	95%	43%
Treated WM	62	92%	34%
MZL	20	10%	5%
CLL	32	3%	0%
MM	14	0%	0%

Xu L et al. *Br J Hematol*. 2016;172:735-744.
Abbreviations: CLL, chronic lymphocytic leukemia; IgM, immunoglobulin M; MGUS; monoclonal gammopathy of undetermined significance; MM, multiple myeloma; MZL, mantle zone lymphom
WM, Waldenström macroglobulinemia

CXCR4- impact of mutations on disease behavior



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Different genetic types of WM

What the DNA is

How it looks in the actual patient

Genotypic-Phenotypic Association in WM[a]

Clinical Characteristics	*MYD88*^{L265P} *CXCR4*^{WT}	*MYD88*^{L265P} *CXCR4*$^{WHIM/FS}$	*MYD88*^{L265P} *CXCR4*$^{WHIM/NS}$	*MYD88*^{WT} *CXCR4*^{WT}
IgM	↑↑	↑↑	↑↑↑↑	↑
BM infiltration	↑↑↑	↑↑	↑↑↑↑	↑
Sensitivity to BTK inhibitors	↑↑↑	↑↑	↑	↓
Incidence, %	~60	27-40[b]	27-40[b]	< 10
	MUT/WT	MUT/MUT	MUT/MUT	WT/WT

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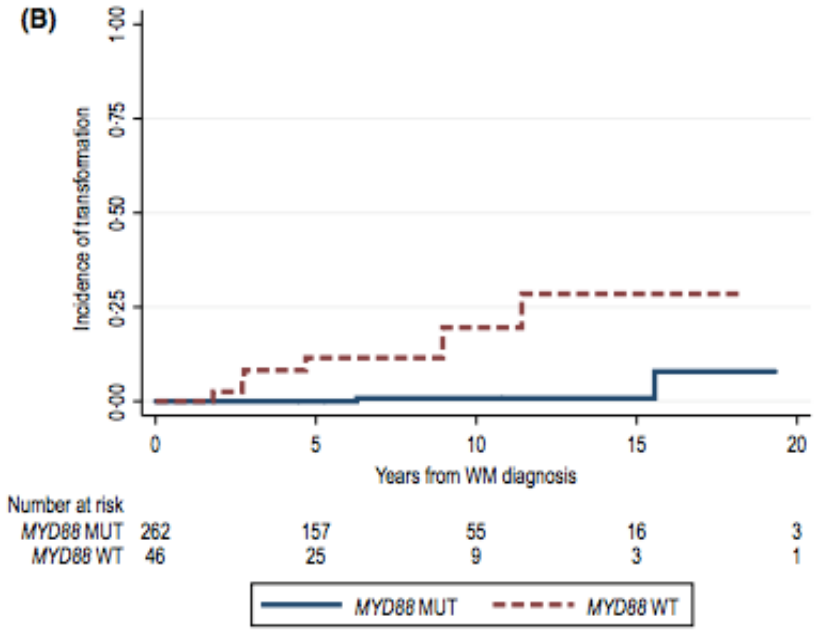
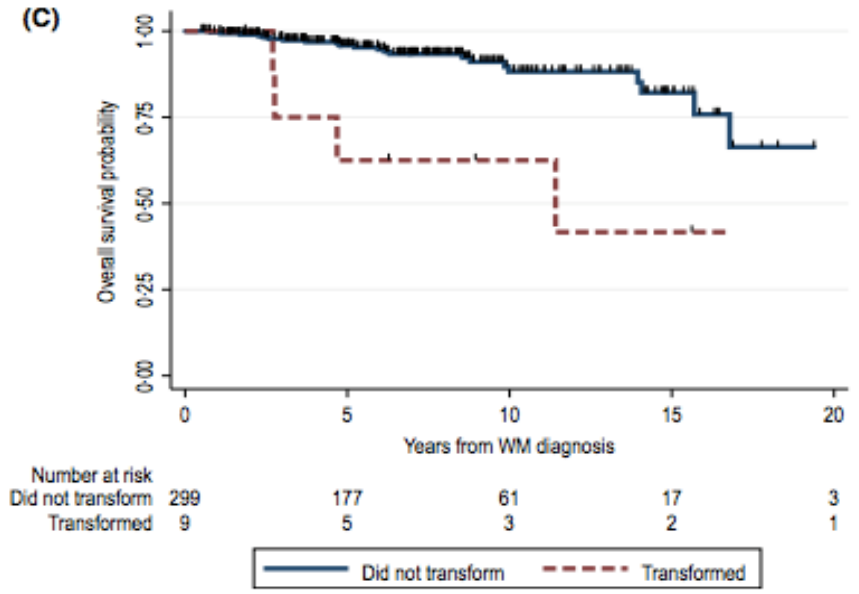
Transformation is a serious event for WM patients and is higher in MYD88 WT





Treon et al BJH 2018

What about the 5% of WM patients who do NOT have the MYD88 mutation?

***MYD88* wild-type Waldenstrom Macroglobulinaemia: differential diagnosis, risk of histological transformation, and overall survival**

- Be sure these patients do not have IgM Myeloma- perhaps 30% do
- The MM patients often have chromosome 14 mutations, lytic bone lesions and no CXCR4 mutations

Treon et al BJH 2018

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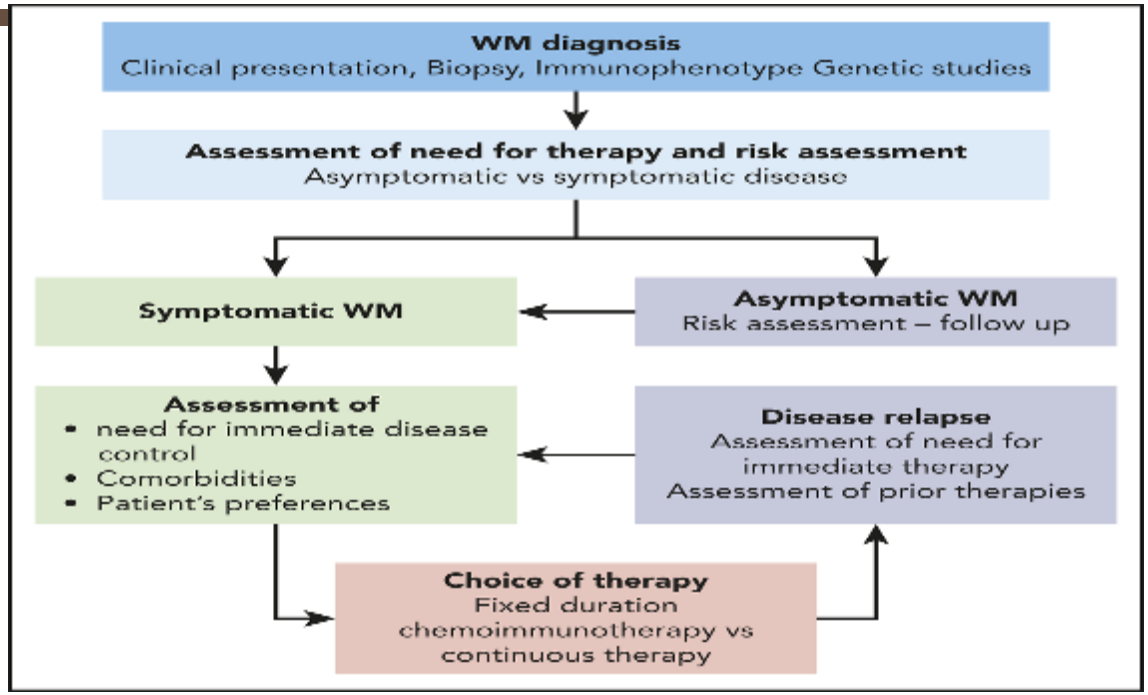
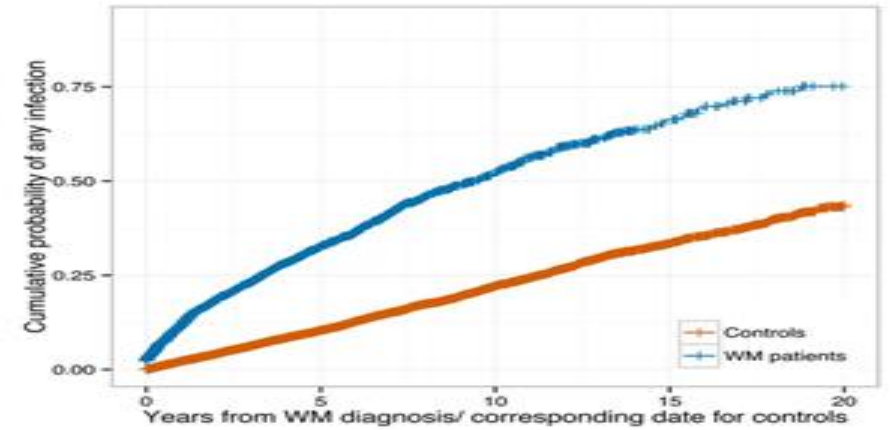
A General Approach to Patients with WM-Summary

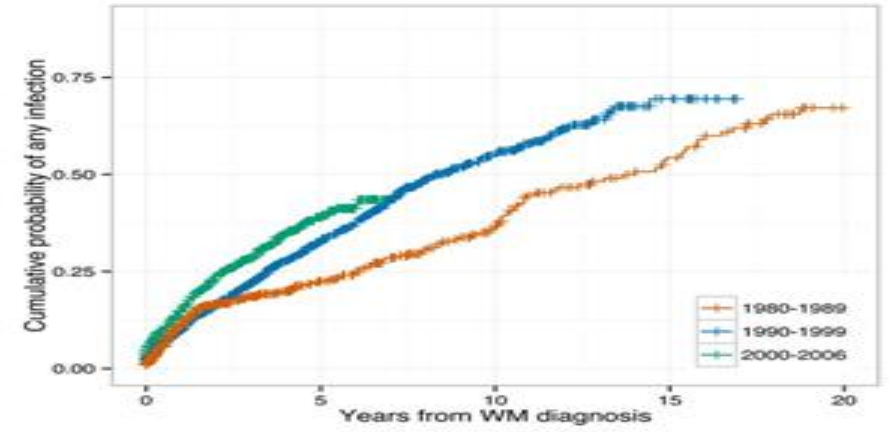


Meletios A. Dimopoulos,Efstathios Kastritis, How I treat Waldenström macroglobulinemia, Blood, 2019,

WM patients are at increased risk of infection ("immunocompromised")

- Swedish study suggested that WM patients carry about a 3 times increased risk of infection
- maybe higher for viral infections
- Lund et al Blood 2014





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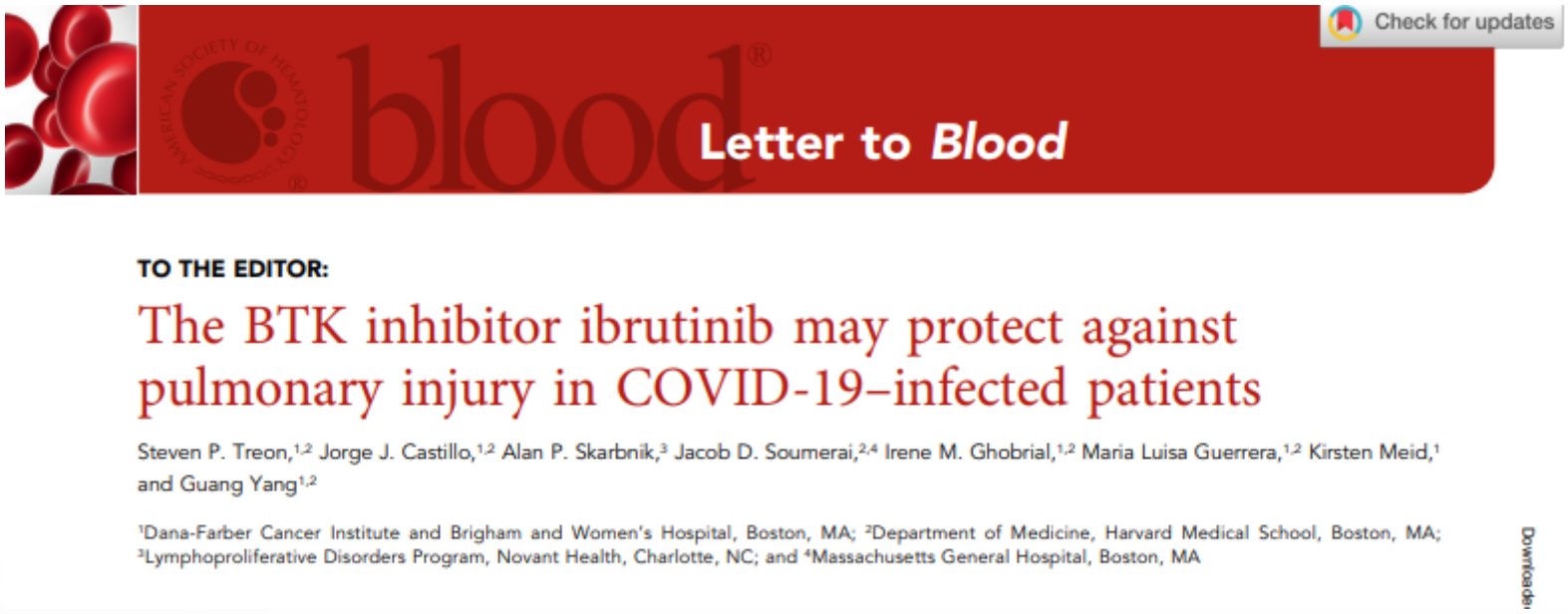
This is potentially very important



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Letter to *Blood*
Check for updates

TO THE EDITOR:

The BTK inhibitor ibrutinib may protect against pulmonary injury in COVID-19–infected patients

Steven P. Treon,[1,2] Jorge J. Castillo,[1,2] Alan P. Skarbnik,[3] Jacob D. Soumerai,[2,4] Irene M. Ghobrial,[1,2] Maria Luisa Guerrera,[1,2] Kirsten Meid,[1] and Guang Yang[1,2]

[1]Dana-Farber Cancer Institute and Brigham and Women's Hospital, Boston, MA; [2]Department of Medicine, Harvard Medical School, Boston, MA; [3]Lymphoproliferative Disorders Program, Novant Health, Charlotte, NC; and [4]Massachusetts General Hospital, Boston, MA

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WM and COVID-19- what to do?

- Dr. Shirley D'Sa- WMUK- https://www.wmuk.org.uk/support/covid19
- IWMF collecting data- WhiMSICAL study- https://www.iwmf.com/news-and-events/news/covid-19-and-wm-%E2%80%93-whimsical-study-now-capturing-covid-19-data
- No uniform recommendations for WM patients- speak with your team about restrictions, travel, treatment, etc
- Do NOT stop your treatment without speaking with your team
- News: BTK inhibitors (such as ibrutinib, acalibrutinib, zanubrutinib) may have a role in the COVID-19 fight

What I tell my patients

- Practice social distancing
- Hug those grandkids if they and their parents have not been wreck less and have no symptoms, etc.
- Wash your hands well, and frequently
- Wear a mask when you are around others that you have not vetted

NY Times

OK let’s take some questions

And thank you!

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