



Memorial Sloan Kettering  
Cancer Center

# Organ Involvement in ECD

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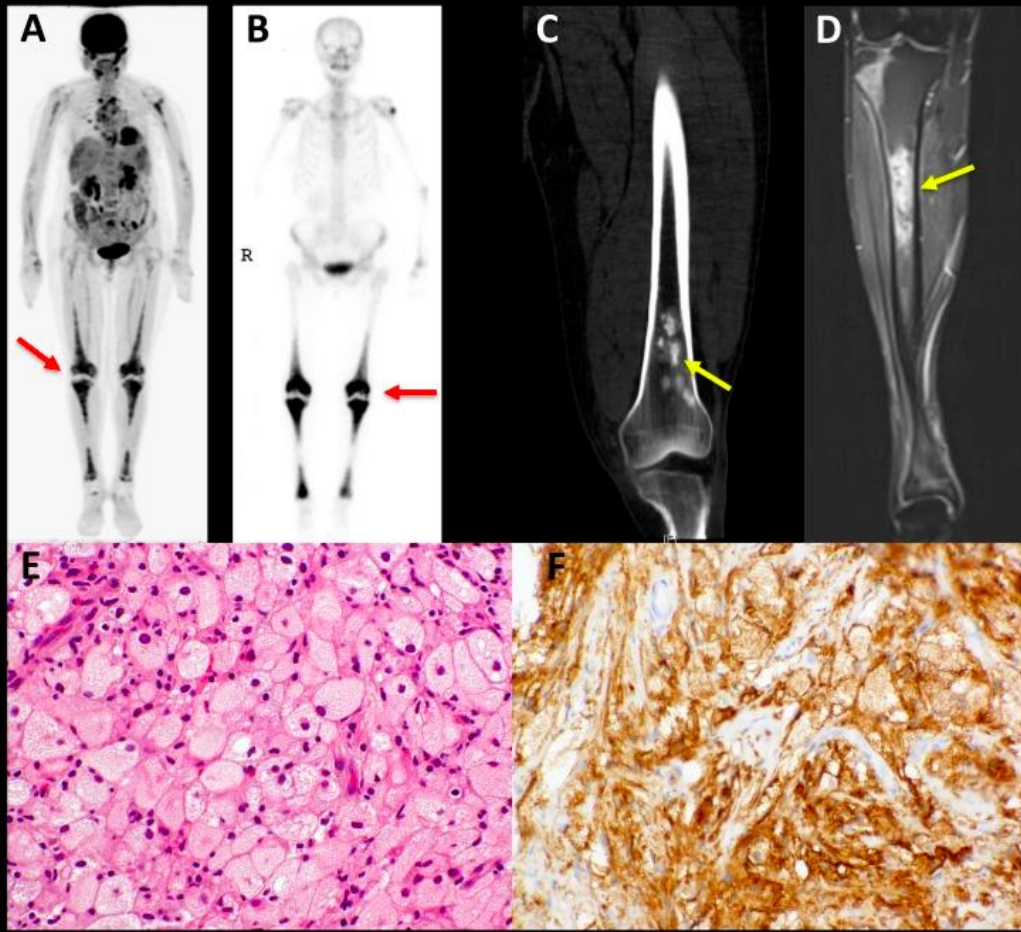
New York, NY

# Disclosures

- Unpaid editorial support from Pfizer
- Paid advisory board membership with Opna Bio



# ECD in bone



Consensus guidelines for the diagnosis and clinical management of Erdheim-Chester disease

Diamond et al, *Blood*, 2014

- Symmetric, sclerotic bone lesions
- Femurs and/or tibia
- Visible by CT/MRI/PET/<sup>99</sup>Tc bone scan
- Skull and skull base
- Spine, sternum
- Extremities (further out than Langerhans)
- bone pain is common
- Little relationship between symptoms and bone sites



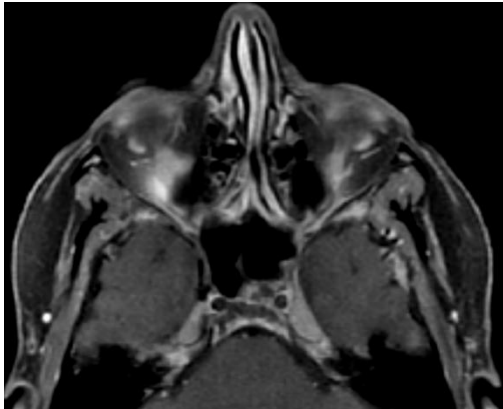
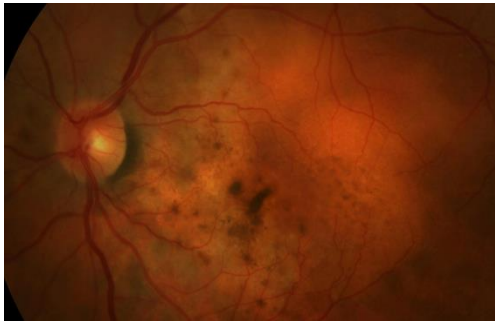
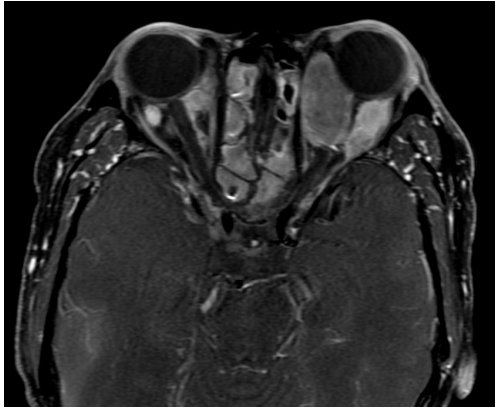
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# Bone ECD

- Pain rarely isolated to areas of disease on PET
- Joint pain as well as bone pain
- ECD bone lesions fluctuate on PET scans over time
- Should not be over-interpreted or treated



# Orbital/Ocular/Sinus ECD

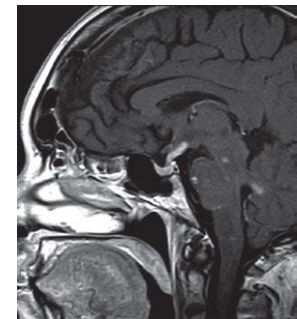
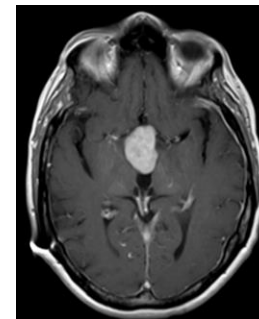
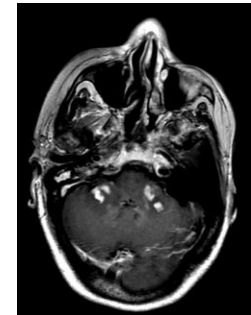
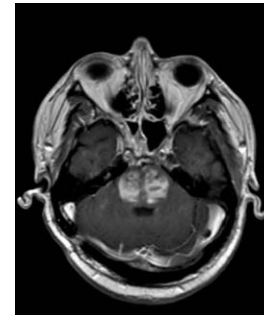
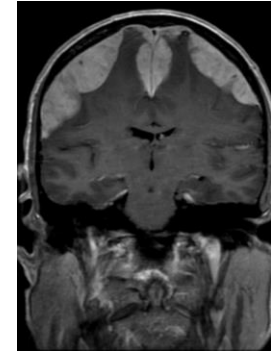
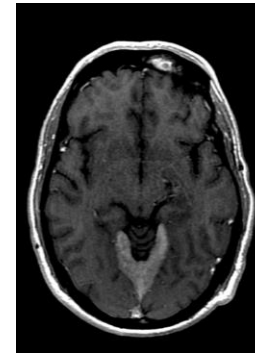


- Eye bulging
- Double vision
- Pain or fullness
- Visual loss or blurring
- Maxillary sinus disease is common (“chronic sinusitis”)
- Maxilla: dental problems
- Choroid/retina: under-appreciated
- Importance of evaluation for non-ECD eye problems



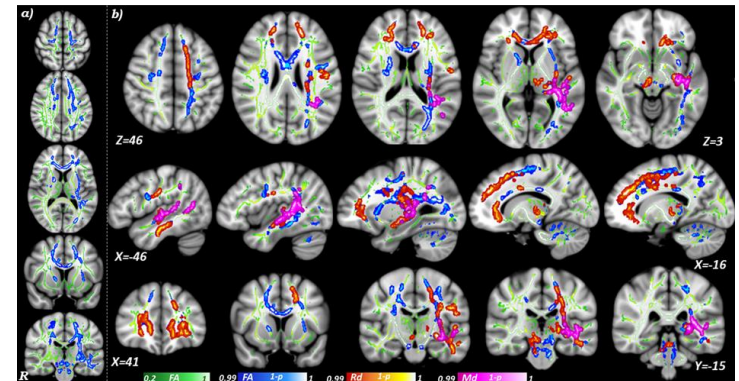
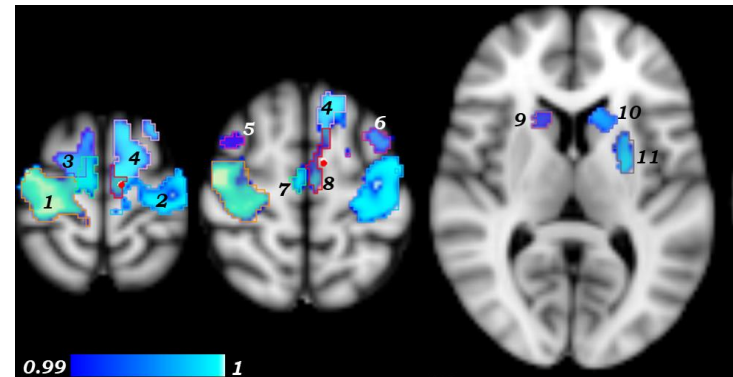
# Neurologic ECD

- ~1/3 of patients
- Slowly progressing symptoms
- Dura (lining of the brain)
- Pons and cerebellum
- Progressive speech and balance problems
- Diabetes insipidus (dysregulation of water hormone)
- Other hormone deficiencies
- Variable cognitive impairment



# Neurologic ECD

- Much more than meets the eye
- Cognitive challenges even without ECD in the brain by MRI
- Mood changes, instability
- Neurologic/psychiatric symptoms most frequent in the ECD registry



# ECD symptoms: all organs, no organs

- Widely varied symptomatology
- Inflammation
- Waves of heat and pain, sweats
- Sadness and discouragement, or indifference
- Variable improvement with targeted therapy
- Pain and fatigue nearly universal



# ECD symptoms in 50 patients

## Most common in patients on no treatment (N = 9)

Stress/anxiety	8	89
Fatigue or sleepiness	7	78
Memory problems	7	78
Depression or sadness	6	67
Aching bones or joints	6	67

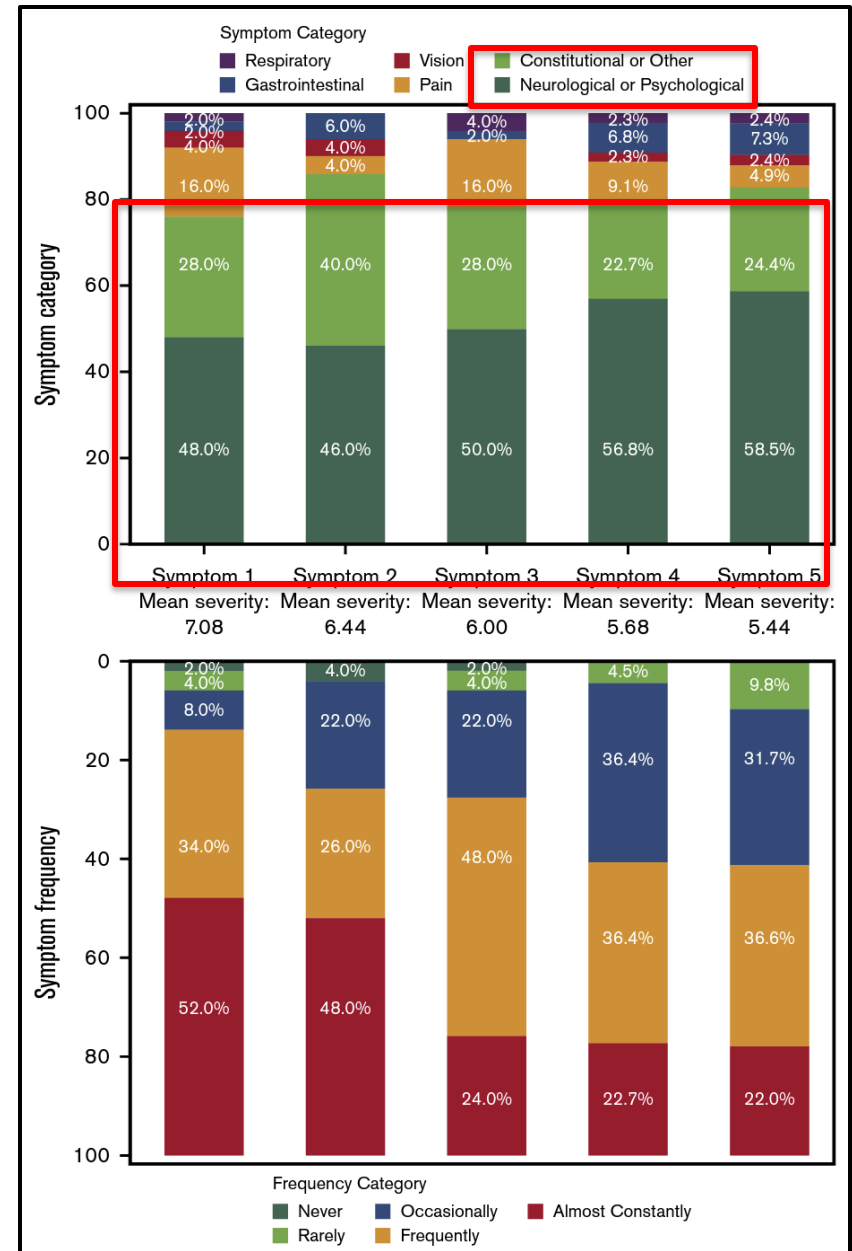
## Most common in patients on conventional therapy (N = 9)

Short-tempered	5	56
Difficulty concentrating or paying attention	5	56
Aching bones or joints	5	56
Pain	5	56
Fatigue or sleepiness	5	56

## Most common in patients on targeted therapy (N = 27)

Fatigue or sleepiness	19	70
Depression or sadness	13	48
Trouble with balance or walking	13	48
Memory problems	13	48
Aching bones or joints	13	48

- Predominance of neurologic, psychologic symptoms
- Fatigue and pain
- **Disability coverage**



REGULAR ARTICLE blood advances

A scale for patient-reported symptom assessment for patients with Erdheim-Chester disease

Eli L. Diamond,<sup>1,\*</sup> Anne S. Reiner,<sup>2,\*</sup> Justin J. Butthorn,<sup>1</sup> Elyse Shuk,<sup>3</sup> Allison J. Applebaum,<sup>2</sup> David M. Hyman,<sup>4</sup> Omar Abdel-Wahab,<sup>5</sup> Rajaji Rampal,<sup>6</sup> Filip Janku,<sup>7</sup> Kathleen Brewer,<sup>8</sup> Jean Campbell,<sup>9</sup> Jun J. Mao,<sup>4</sup> Thomas M. Atkinson,<sup>10</sup> and Katherine S. Panageas<sup>2,7</sup>

Diamond et al, *Blood Advances*, 2019

# ECD Patient-reported outcomes

PRO assessment	Enrollment						
	N	%	Median	Mean	StDev	Min	Max
FACT-G: physical well being	158	99.4	20	18.8	6.5	0	28
FACT-G: emotional well being	158	99.4	17	16.6	4.5	3	24
FACT-G: social well being	158	99.4	21	19.7	6.1	1	28
FACT-G: functional well being	158	99.4	15.6	15.7	6.7	0	28
<b><u>FACT-G: total</u></b>	<b><u>158</u></b>	<b><u>99.4</u></b>	<b><u>74.3</u></b>	70.8	19	22	105
BPI: severity	154	96.9	1.6	2.3	2.5	0	8
BPI: interference	154	96.9	0.4	2.4	3	0	10
BPI: total	154	96.9	1.2	2.4	2.7	0	8.9
Clinically-relevant pain	75	49					
BFI: severity	154	96.9	4.7	4.1	2.9	0	9.3
BFI: interference	154	96.9	3.3	3.5	3.1	0	10
BFI: total	154	96.9	3.7	3.7	3	0	9.8
Clinically-relevant fatigue	110	71					
Top 3 ECDSS Symptoms: Severity	154	96.9	7	6.7	2.2	0	10
Top 5 ECDSS Symptoms: Severity	154	96.9	6.6	6.4	2.1	0	10
<b><u>Top ECDSS Symptom: Other</u></b>	<b><u>52</u></b>	<b><u>33</u></b>					
<b><u>Top ECDSS Symptom: Neurological</u></b>	<b><u>58</u></b>	<b><u>37</u></b>					
Top ECDSS Symptom: GI	10	6					
Top ECDSS Symptom: Pain	27	17					
Top ECDSS Symptom: Vision	5	3					
Top ECDSS Symptom: Respiratory	6	4					
Unmet health care service needs	58	38					
<b><u>Unmet psychological/emotional needs</u></b>	<b><u>90</u></b>	<b><u>58</u></b>					
<b><u>Unmet physical and daily health needs</u></b>	<b><u>90</u></b>	<b><u>57</u></b>					
<b><u>Unmet care and support needs</u></b>	<b><u>37</u></b>	<b><u>24</u></b>					
Unmet sexual needs	37	25					
<b><u>Number of Unmet needs</u></b>	<b><u>159</u></b>	<b><u>100</u></b>	4	7	7.4	0	29
<b><u>3+ Unmet needs</u></b>	<b><u>100</u></b>	<b><u>63</u></b>					
<b><u>5+ Unmet needs</u></b>	<b><u>79</u></b>	<b><u>50</u></b>					
<b><u>10+ Unmet needs</u></b>	<b><u>48</u></b>	<b><u>30</u></b>					

# QOL tracks with symptoms and needs

<u>Change Variable (12mo-Enrollment)</u>	Estimate	95% CI	P-value
<b><u>BPI Total</u></b>	<b><u>-1.42</u></b>	<b><u>-2.14, -0.70</u></b>	<b><u>0.0002</u></b>
Change to Clinically Relevant Pain	-6.70	-12.80, -0.61	0.03
<b><u>BFI Total</u></b>	<b><u>-1.69</u></b>	<b><u>-2.36, -1.02</u></b>	<b><u>&lt;0.0001</u></b>
Change to Clinically Relevant Fatigue	-5.55	-12.13, 1.03	0.10
<b><u>Top 3 ECDSS Symptoms: Severity</u></b>	<b><u>-1.92</u></b>	<b><u>-2.82, -1.03</u></b>	<b><u>&lt;0.0001</u></b>
<b><u>Top 5 ECDSS Symptoms: Severity</u></b>	<b><u>-1.84</u></b>	<b><u>-2.75, -0.94</u></b>	<b><u>0.0001</u></b>
Sustained Unmet health care service needs	2.35	-2.87, 7.57	0.37
Sustained Unmet psychological/emotional needs	2.66	-1.46, 6.77	0.20
Sustained Unmet physical and daily health needs	1.34	-2.64, 5.33	0.51
Sustained Unmet care and support needs	2.46	-4.75, 9.67	0.50
Sustained Unmet sexual needs	3.95	-2.43, 10.33	0.22
Change to Met health care service needs	5.31	0.16, 10.47	0.04
<b><u>Change to Met psychological/emotional needs</u></b>	<b><u>5.76</u></b>	<b><u>0.81, 10.71</u></b>	<b><u>0.02</u></b>
<b><u>Change to Met physical and daily health needs</u></b>	<b><u>7.20</u></b>	<b><u>1.90, 12.50</u></b>	<b><u>0.008</u></b>
<b><u>Change to Met care and support needs</u></b>	<b><u>6.32</u></b>	<b><u>1.10, 11.55</u></b>	<b><u>0.02</u></b>
Change to Met sexual needs	-0.33	-6.19, 5.54	0.91
Increasing Number of Unmet Needs	-0.79	-1.07, -0.51	<0.0001



**THANKS**



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