

REFSUM DISEASE



Today's Presenters



Dr. Florian Eichler, MD

Associate Professor of Neurology at
Massachusetts General Hospital and
Harvard Medical School



Kristie DeMarco

President and Founder of Global DARE
Foundation & ULF Board Member

Discussion Topics



Provide a high-level overview of Refsum Disease



Kristie's Refsum Journey



Establishing Global DARE Foundation & Refsum Advocacy



Discuss our Medical & Research objectives

What is Refsum Disease?

- Adult Refsum disease is a metabolic disorder caused by a few faulty genes (principally PHYH) which affects the pathway that breaks down phytanic acid.
- Phytanic acid is not produced in the body but found in many foods.
- The highest concentration of phytanic acid is found in dairy products, beef, lamb and some fish.
- In Refsum patients phytanic acid accumulates in nerves, liver and fat tissues.
- Refsum disease can be life threatening if undiagnosed. Therefore, early diagnosis is very important.

Pathophysiology of Refsum Disease

- Peroxisomal disorder
- Autosomal recessive (prevalence 1:10⁶)
- 90% due to deficiency in phytanoylCoA hydroxylase (Chr 10p13)
- 5% due to variants of rhizomelic chondrodysplasia punctate (RCDP) due to defect in import of PTS-2 signal containing enzymes into the peroxisome
- 5% due to alpha-methyl-acyl racemase (AMARC) or PHARC deficiency or unknown

What are the primary symptoms?

**Retinitis
Pigmentosa**
(Loss of Vision)

Anosmia
(Loss of Smell)

**Peripheral
Neuropathy**
(Nerve pain,
numbness)

**Hearing
Loss**

**Cerebellar
Ataxia**
(balance issues)

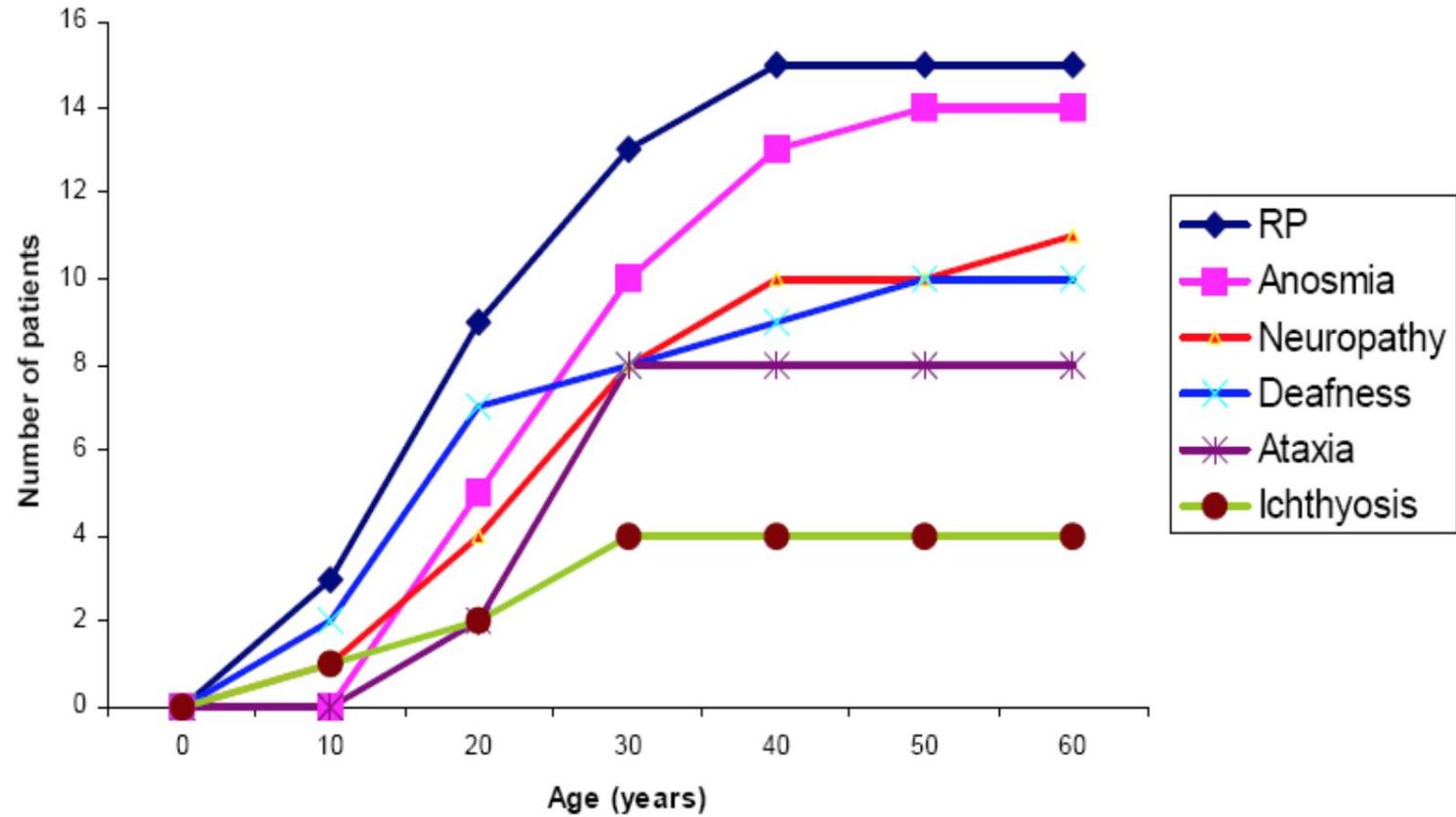
**Skeletal
Dysplasia**
(Bone changes)

Ichthyosis
(itchy scaly skin)

**Cardiac
Arrhythmias**

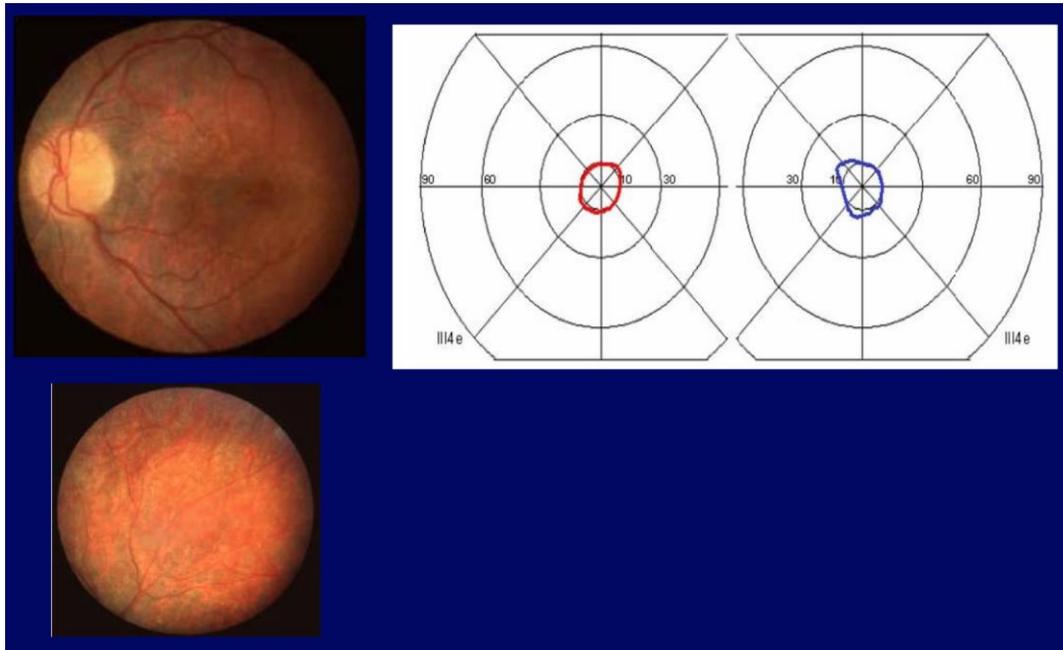
Weakness

Disease Course in Refsum Disease



Wierzbicki AS et al, J Neurochem 2002

Clinical Features of Refsum Disease



What are the current treatments?

Low Phytanic Acid Diet

- A strict diet low in phytanic acid is used for long-term management. This diet includes the removal of foods that are high in phytanic acid such as dairy products, beef, lamb and some fish.
- Dietary restriction of phytanic acid intake helps lessen or resolve ichthyosis, sensory neuropathy, and ataxia. It is suspected to slow the progression of vision and hearing loss.

Plasmapheresis or Lipid Apheresis

- A dialysis-type process that is the direct removal of phytanic acid in the blood
- It is typically used in acute management of people hospitalized as a result of Refsum disease where it helps to resolve acute heart arrhythmias or extreme weakness.
- It may be done on a chronic regular basis in some patients whose phytanic acid levels do not fall sufficiently on diet.

Symptom management

- Symptom management could include cataract surgery, eye drops, hearing aids, cochlear implants, skin lotions, pain management, knee replacement, heart and liver transplant

Kristie's Refsum Journey



Strong & Healthy

- 2010-2013 started a plan to lose weight and exercise. Lost 75lbs.
- No medical issues except minor hip pain and chronic migraines
- Became an Ironman level Triathlete
- Started a low carb nutrition plan in 2017



Deteriorating Health

- Neuropathy, leg pain & vision issues
- No longer able to ride & run
- 15 specialists and countless diagnostic tests plus surgery
- Something was "wrong"
- I never gave up on a diagnosis



Diagnosis & Navigating

- 2019 finally was diagnosed through genetic testing
- Struggled to navigate post diagnosis
- ULF , Global Genes and NORD were awesome resources





**DEFEAT
ADULT
REFSUM
EVERYWHERE**

DARE'S MISSION

Global DARE Foundation's mission is to promote world-wide awareness and better quality of life for all who are diagnosed with Adult Refsum Disease.

OUR BOARD OF DIRECTORS

Global DARE Foundation's Board of Directors are part of the Refsum Disease Community and are highly motivated to do whatever it takes to find better therapeutic methods and ultimately a cure.



Kristie DeMarco
President



Susan Kuranoff
Secretary



John DeMarco
Treasurer



Alan Gunzburg
Director



Kim Bruce
Director

OUR KEY ACCOMPLISHMENTS TO DATE



OCT 2019

Launched Global
DARE Foundation



NOV 2019

Website &
1st Fundraiser
Launched



JAN 2020

Medical &
Scientific
Advisory Board
Established



MAR 2020

Announced start of
first research
project



**JUN/JULY
2020**

Launched Webinar
Series & Initiate
Patient Registry

Success

2020 REFSUM ADVOCACY PLAN

The Global DARE Foundation Board has established a clear plan for 2020 aligned to the foundation's mission



Research & Care

- Establish and mature a Medical & Scientific Advisory Board.
- Research patient registries for deployment in 2020 to collect patient data for research.
- Conduct Research on Phytanic Acid in Foods
- Drive forward treatment guidelines for Adult Refsum Disease
- Define and prioritize research priorities



Raising Awareness

- Create and mature a Refsum Website
- Create a Refsum video showing the impact of Refsum Disease on patients.
- Develop and mature social media sites
- Find more patients through outreach efforts with clinicians at medical facilities and on social medial platforms.
- Run two to three fundraisers in 2020 with the goal of raising \$25,000.



Collaboration

- Mature the Foundation
- Create a Collaborative Network of Patients, Clinicians, Researchers and Supporters to drive Refsum Advocacy
- Conduct a 2020 Refsum Conference connecting Patients, Clinicians Researchers, and Supporters
- Partner with other foundations to find synergies.

OUR MEDICAL & SCIENTIFIC ADVISORY BOARD

The Global DARE Foundation is fortunate to have an advisory board made up of the foremost researchers and clinicians in the field of Refsum Disease, peroxisomal disorders and Retinitis Pigmentosa. In their roles as medical and scientific advisers, members collaborate with each other and with our Board of Directors to drive forward better quality of life for those diagnosed with Refsum Disease.



Florian Eichler, MD
MSAB Chair



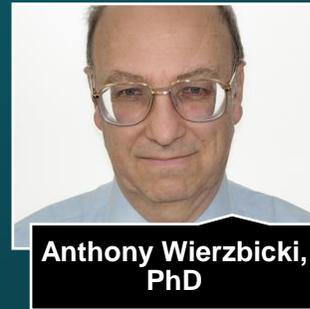
Ronald Wanders, PhD
MSAB Co-chair



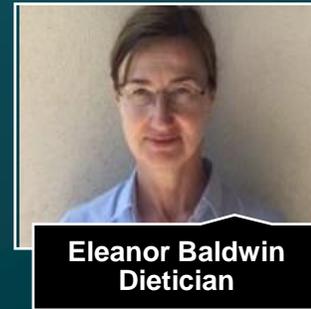
Joe Hacia, PhD
MSAB Co-Chair



Radha Ramachandran, MD, PhD



Anthony Wierzbicki, PhD



Eleanor Baldwin
Dietician



Nancy Braverman, MD, MS



Mousumi Bose, PhD



Sacha Ferdinandussa, PhD



Bart Leroy, MD, PhD



Arthur Bergen, PhD



Clara van Karnebeek, PhD



Hans Waterham, PhD



Sarah Firman, Dietician

MEDICAL & RESEARCH OBJECTIVES

Our Medical & Scientific Advisory Board has set focused medical & research objectives aligned to DARE's mission



Treatment & Care

- Develop, publish and maintain treatment guidelines for the care of ARD patients
- Yearly updates to the diet and nutrition guidelines
- Publish guidelines on nutritional approaches and exercise to minimize fat burning
- Participate in the educational activities of DARE including assistance with content on the website and other outreach opportunities



Research

- Collaborate in establishing a patient registry and Natural History Study for ARD
- Provide advice and recommendations to the DARE Board on short-term and long-term planning for better therapeutic approaches and a potential cure for ARD
- Assist the DARE board in the review of scientific proposals for support and funding
- Recommend research on nutrition, diet and physical activity (e.g phytanic acid in food, exercise, fat mobilization)



Collaboration

- Advocate within the research and medical field for focused work on areas that may improve the quality of life of patients diagnosed with ARD.
- Assist DARE in interactions and connections with sponsors and industry.
- Help plan, promote, and generate presentations for the annual Conference.
- Promote and expand cooperation with other research and rare disease organizations.
- Raising awareness with the medical community to promote earlier diagnosis of Refsum Disease

Q&A

For more information contact:



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www.defeatadultrefsumeverywhere.org