
MASARYK UNIVERSITY
FACULTY OF MEDICINE

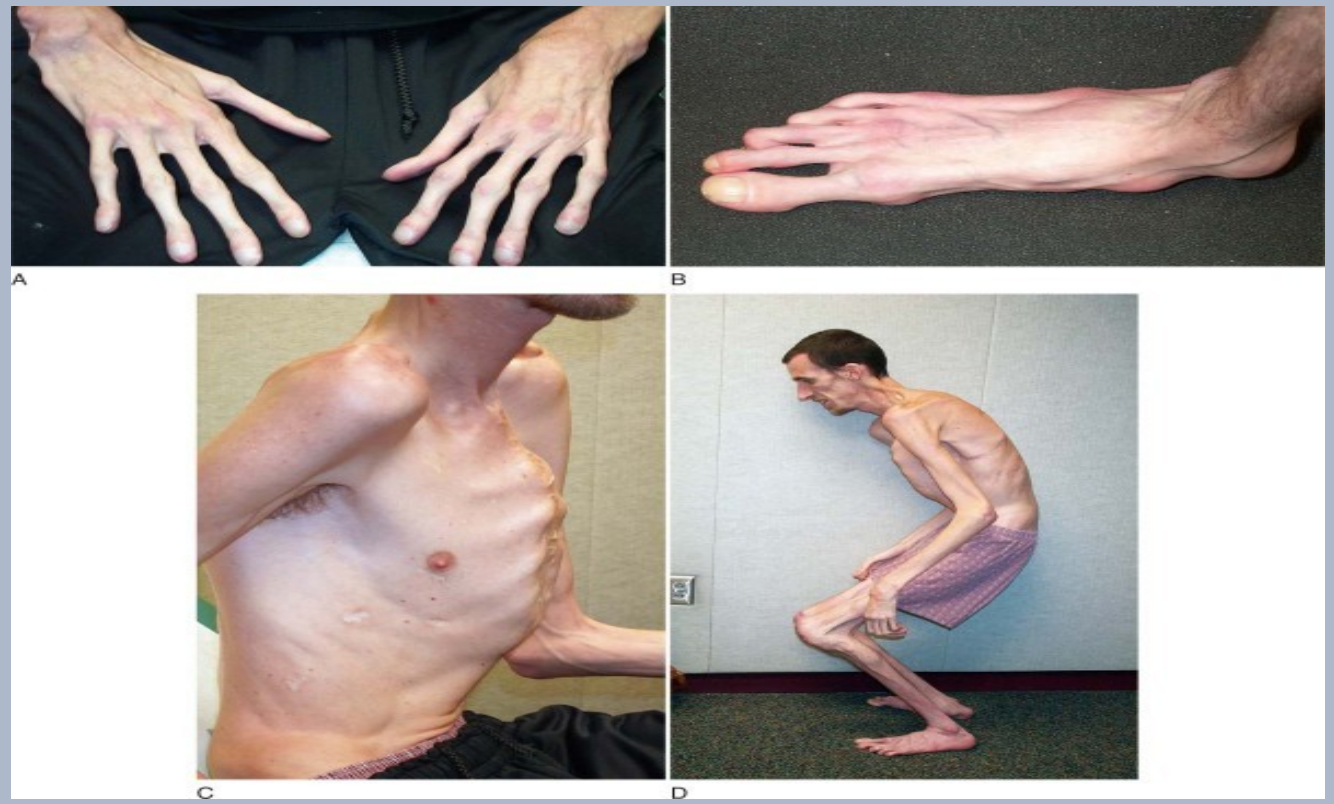
# GENETICS

Andreas Kelepeshis

UCO: 448358

# MARFAN SYNDROME

- Genetic disorder of defective connective tissue



# PATHOLOGY AND CAUSE

- **Fibrillin 1 structural protein dysfunction due to FBN1 gene mutation (locus 15q21)**
  - **Autosomal dominant**
  - **Risk factor : Family History**
  - **Compromised extracellular matrix (e.g. elastic fibers)**
  - **Fibrillin loss → ↑transforming growth factor beta (TGF-β) → ↓vascular muscle, extracellular matrix → compromises strength, elasticity → Marfanoid appearance**

- **Can affect Skeleton, heart, blood vessels, eyes, lungs but the most commonly affects aorta, ligaments, ciliary zonules supporting lens.**

# SIGNS AND SYMPTOMS

## ➢Eyes

- Bilateral cranial, temporal dislocation of lens, Retinal detachment

## ➢Skeleton

- Tall, slim with long ( ↑ arm span to height ratio), slender limbs, Narrow arched palate
- Hyperextensibility with inability to extend elbows 180°
- Scoliosis
- Pes excavatum, pigeon chest.
- Arachnodactyly (long fingers)

# SINGS AND SYMPTOMS

- **Heart**

  Aortic root dilation, floppy valve syndrome (mitral valve), aortic dilation causes aortic valve insufficiency

- **Lungs**

  Blebs, bullae (dilated spaces filled with air predisposing to spontaneous pneumothorax)

# SIGNS AND SYMPTOMS

- **Blood Vessels**

  Cystic medial necrosis of aorta, aortic incompetence, dissecting aortic aneurysms.

- **Skin**

  Striae (stretch marks)

# DIAGNOSIS

- **History, physical exam**

  Ghent nosology criteria: scale using major, minor indicators to establish Marfan diagnosis, max 20 points.

  - includes family history, skeletal, vascular, ocular, pulmonary/skin symptoms (e.g. ectopic lens and aortic dissection)

- **Genetic Testing**

  Confirmation of FBN1 mutation

# TREATMENT

- **Medications**
  - Beta blockers (slow aortic dilation)
  - Angiotensin receptor blockers (decrease TGF-β signalling, slow aortic dilation)

- **Surgery**
  - Valve, lens replacement.
  - Aortic dissection repair

# OTHER INTERVENTIONS

- **Physiotherapy**
  Restrict high-intensity exercise, scoliosis treatment.

- **Routine aortic, heart, ophthalmic screening**