

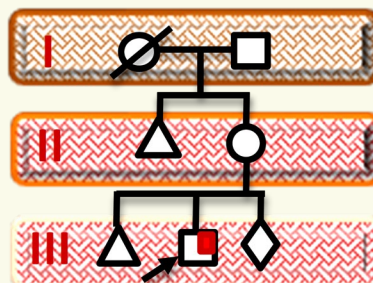
All India Institute of Medical
Sciences Rishikesh (AIIMSR)
Department of Paediatrics

Rishi Vansh

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From the desk of Editor

The Department of Paediatrics is publishing a monthly newsletter for faculty and residents. The newsletter is related to genealogical parlance and a deliberate attempt to enhance awareness for genetic disorders with recent updates.



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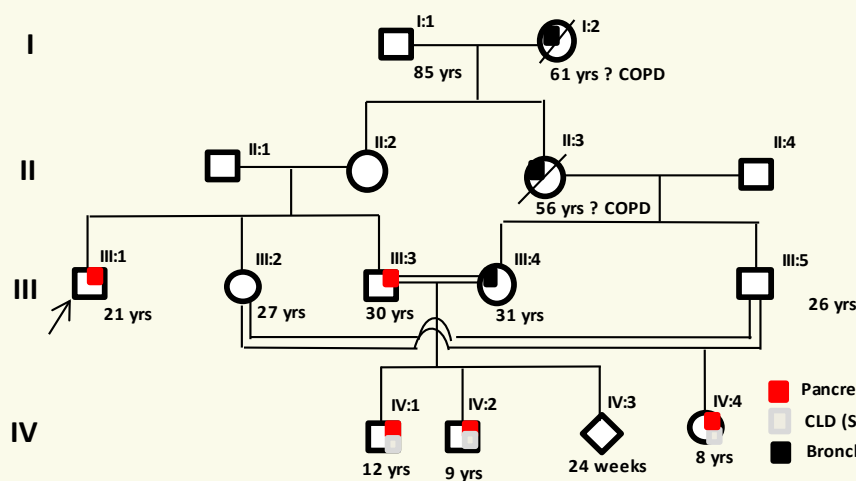
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Pulmogenetics-II

Cystic fibrosis (CF)/ Mucoviscidosis - Part (II)

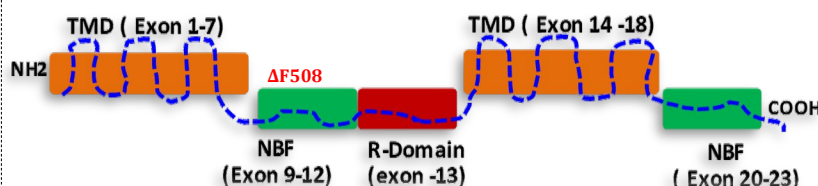


SC- Sweat chloride test
CLD- chronic lung disease

■ Pancreatitis
■ CLD (SC+)
■ Bronchiectasis(SC -)

Prashant

CFTR functional domains with respected exons

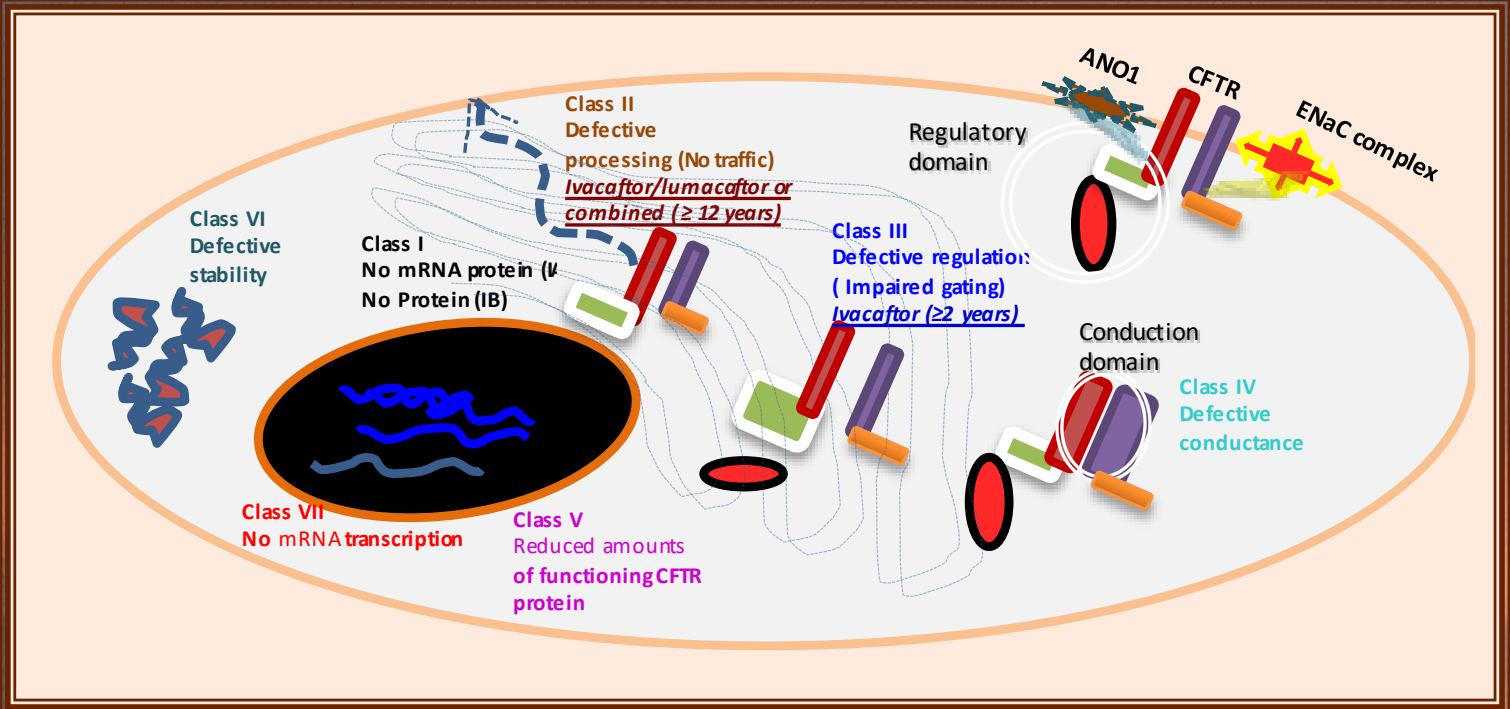


- NBF- nucleotide binding fold for ATP-binding
- R domain- transmembrane conductance regulator
- TMD-Membrane-spanning domain for Transmembrane domain
- ΔF508 - The phenylalanine residue at position 508 (ΔF508)

Insight:

1. How would you like to counsel possible phenotype for case IV:3?
2. What is the functional classification of CFTR gene mutations?
3. How many domains in the CFTR protein?
4. Therapy of choice for cystic fibrosis-related diabetes mellitus (CFRDM)?
5. Why to screen CF in newborns age?

Functional classification of CFTR gene mutations



ANO1-anoctamin 1, calcium-activated chloride channel, ENaC- epithelial sodium channel complex inhibit -SCNN1D, SCNN1B and SCNN1G

Mechanisms for CF pathology are dysfunctional of bicarbonate & mucin secretion and exact mechanism is still illusive

Counselling for possible phenotype for case IV:3-

First confirm the diagnosis in proband and screening the parents for carrier status

- Multiple loops of consanguinity in the family
- 50 % chance to be unaffected baby for familial phenotype (for AD trait)
- 50 % chance of to be affected with chronic lung disease (AD trait) with variable severity (Various modifier genes have been reported) in each pregnancy
- 25 % chance of CLD and pancreatitis (Cystic fibrosis)
- 50 % chance to be affected with bronchiectasis
- Need to discuss for antenatal testing but defining exact phenotype of the AD traits is difficult

CFRDM

- Cystic fibrosis-related diabetes mellitus- most common type DM in CF cases
- Protect oxidative stress & releasing of hormones
- Progressive scarring of Pancreases
- Present in 40-50%
- Lack of consensus – Management
- Increase age wise, 2% (children) < 19% (adolescents) and 50% (> 30 years)

Thought Riveting:

- What could be the best population-based screening tool for CF for a high carrier rate population?
- What are the explanations for the unsuccessfulness of *P. aeruginosa* vaccines? Can we get success?
- Why does the CF gene show tissue-dependent phenotype expression?
- What is the ABC transporter on the nuclear membrane?
- What is the possible genetic mechanism for altered mucus in CF?
- What could be the possible positive effect of regular hypertonic MgSO₄ inhalation on the lung function of a CF case?

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