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

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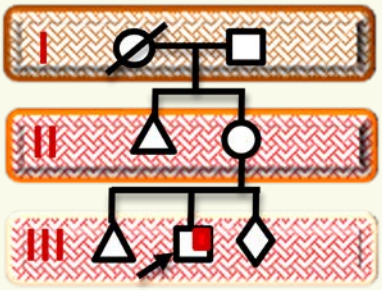
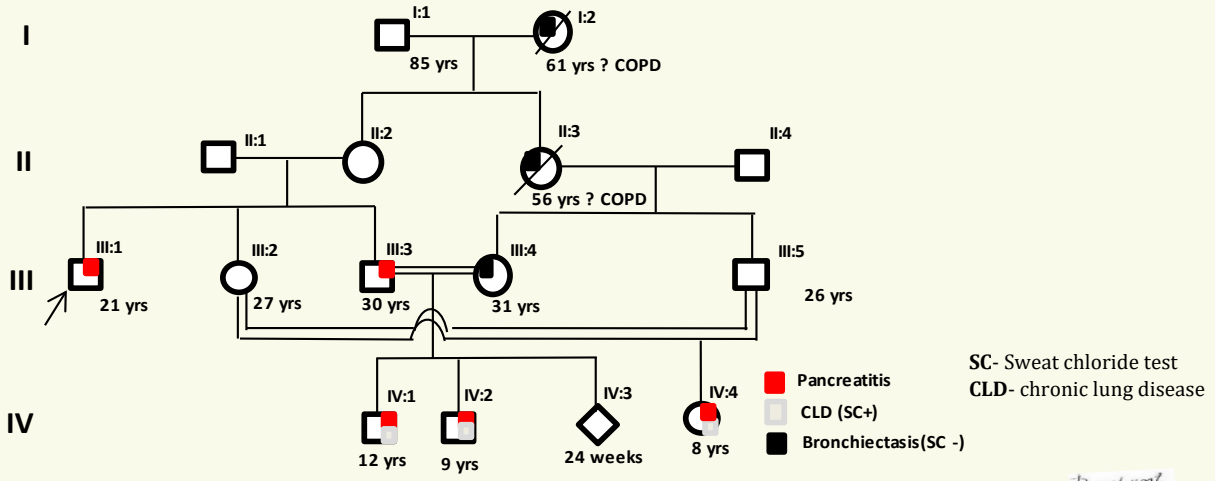
From the desk of Editor

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.

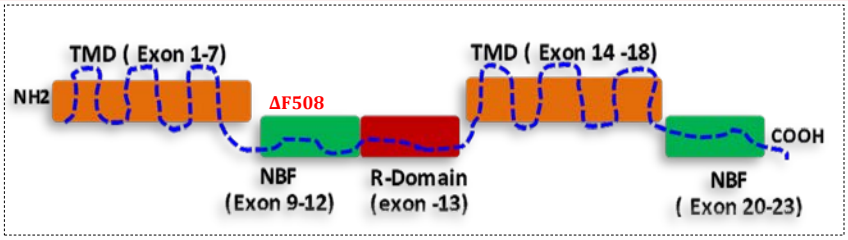


Pulmogenetics-II

Cystic fibrosis (**CF**)/ Mucoviscidosis – **Part (II)**



CFTR functional domains with respected exons

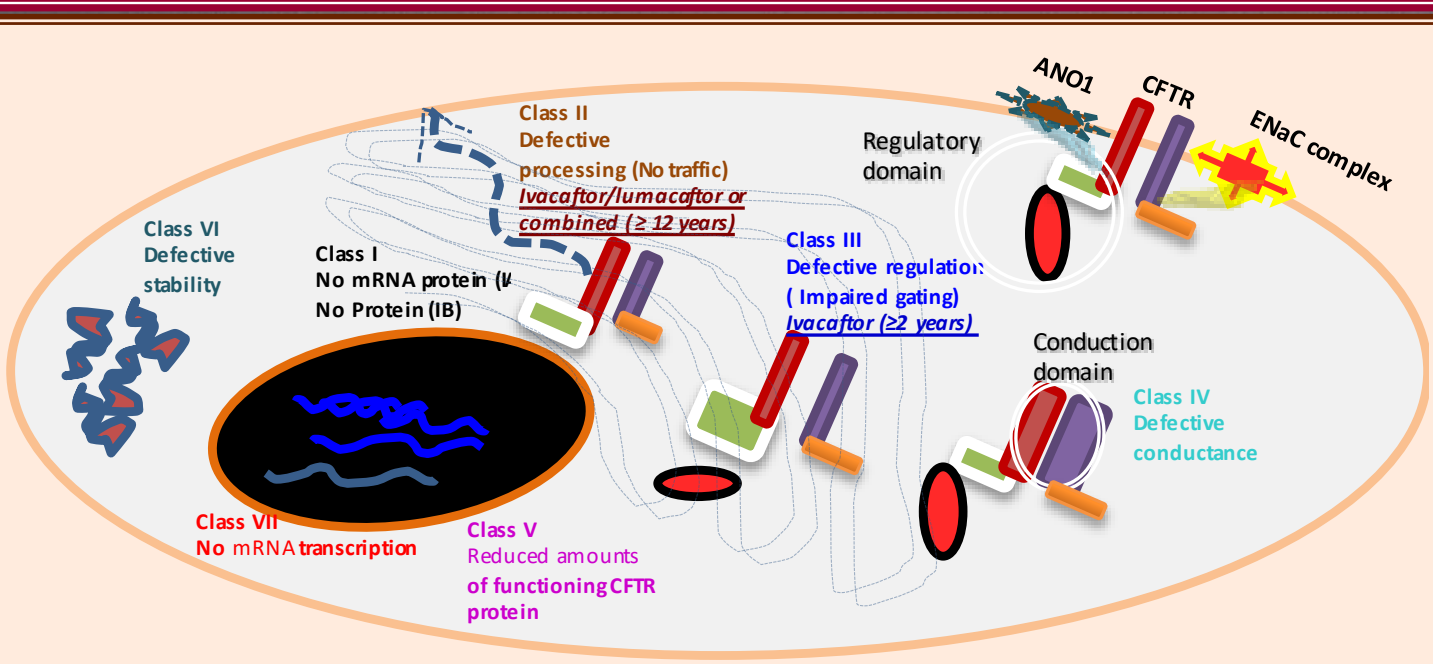


- **NBF**- nucleotide binding fold for ATP-binding
- **R domain**- transmembrane conductance regulator
- **TMD**-Membrane-spanning domain for Transmembrane domain
- **ΔF508 -** The phenylalanine residue at position 508 (ΔF508)

Insight:

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

Functional classification of CFTR gene mutations



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

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

Counselling for possible phenotype case IV:3-

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

- Multiple loops of consanguinity in the family
- 50 % chance to be unaffected baby for familial phenotype (AD trait)
- 50 % chance 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 & 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 (CFRDM)- is the most common type DM in CF cases
- Protect oxidative stress & releasing of hormones
- Progressive scarring of Pancreas
- Present in 40–50%
- Lack of consensus – Management
- Increase age wise, 2% (children)< 19% (adolescents) & 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 failures 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?***
- ***Can the regular hypertonic MgSO4 inhalation effect the lung function of a CF case?***

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