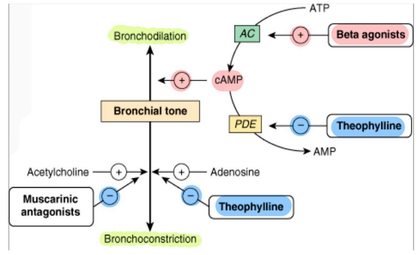
Treatment of Bronchial Asthma

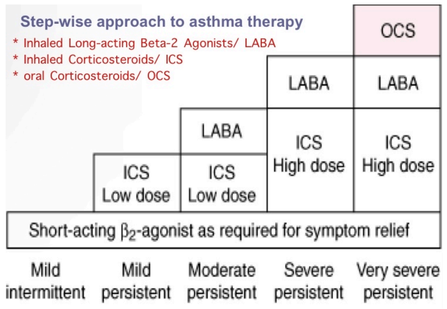
Intro

- Definition of Asthma
  - = CHRONIC [inflammatory] disorder with [intermittent] narrowing of the airways
  - characterized by [resistance to flow] over short periods of time, in the intrapulmonary airways
- Factors in the treatment strategy
  - 1/ asthma is a CHRONIC condition>> needs CHRONIC therapy
  - 2/ goal of therapy>> NORMAL function
    - 1- MINMAL [symptoms] even during sleep
    - 2- NO or INFREQUENT [ACUTE episodes]
    - 3- rare need for [beta AGONIT] inhaler therapy
    - 4- NO limitation of activities... even sports
    - 5- [peak flow rate] variability less than 20%
    - 6- NO or MINIMAL adverse effects from drugs
  - 3/ the condition is heterogeneous in terms of:
    - cause or trigger mechanism
      - 1/ exercise
      - 2/ cold air
      - 3/ cigarette smoking
      - 4/ stress/ anxiety situations
      - 5/ animal dander's... cats, dogs
      - 6/ allergens... grass, trees, molds, cockroach
      - 7/ pollutants... sulfur dioxide, ozone
      - 8/ fumes/ toxic substances
      - 9/ medications... ASA, NSAID's
    - extent of [broncho-constriction]
    - degree of [inflammation]
  - 4/ the course is UNPREDICTABLE
  - 5/ therapy must be INDIVIDUALISED
- Risk of NOT treating Asthma
  - 1) poor or no control of the patient's asthma
  - 2) accelerated decline in the function of the patient's lungs
  - 3) increased number of attacks of asthma
  - 4) poorer response to therapy if started late
  - 5) increased mortality from asthma
- Pathogenesis of RE-exposure
  - Early response>> prevented by [broncho-dilators]
  - Late response>> prevented by [corticosteroids]
- Diagnosis of Asthma
  - Cough>> usually in [spasms]>> to the point f vomiting>> night-time worse than day-time>> may follow exposure to [cold air] [exercise] [URI/ infection] [allergen]
  - 1} Subjective
    - Dyspnea>> wheezing>> sputum
    - Past history of [bronchiolitis] as a child
    - Family history
  - 2} Objective
    - diminished [peak expiratory flow rate/ PEFR]
    - reduced [mean] & [forced expiratory flow rate/ FEFR]
    - reversibility with [broncho-dilators]
    - heightened response to [Methacholine Test]
    - increase in [expire nitric oxide/ NO]
    - increase in [inflammatory mediators] & [their metabolic products] in body fluids
- Myths & Misconceptions
  - ~ patient & physician [steroido-phobia]
  - ~ asthma is an emotional illness
  - ~ asthma is an ACUTE disease
  - asthma medications are addictive
  - asthma medications become IN-effective if they are used regularly
  - asthma is NOT a fatal illness

MOA



Step-wise Approach to Asthma Therapy



Relievers / Controllers

- Quick relief medications
  - 1] inhaled SHORT acting Beta-2 AGONISTs
  - 2] inhaled anti-cholinergics
  - 3] SYSTEMIC Corticosteroids
- Long-term control medications
  - 1] TOPICAL/ INHALED Corticosteroids
  - 2] INHALED Cromolyn Na & Nedocromil
  - 3] ORAL Methyl-xanthines= Theo-phyllines
  - 4] INHALED long acting Beta-2 AGONISTs/ LABAs
  - 5] ORAL leukotriene modifiers/ LTRAs

Survey of the changing therapy of asthma by decade

- 1960's
  - Amino-phylline
  - Epinephrine
  - Ephedrine
- 1970's
  - Beta AGONISTs
  - Theo-phyllines
  - Beclo-methasone
  - Cromolyn
  - Ipra-tropium
- 1980's
  - Beta AGONISTs
  - Inhaled Corticosteroids
  - Cromolyn
  - Ipra-tropium
- 1990's
  - Inhaled Corticosteroids
  - Beta AGONSTs
  - Theo-phylline
  - Leukotriene inhibitors
- 2000's
  - Corticosteroids + LABA/ long acting beta agonist
  - LTRAs/ leukotriene receptor ANTAGONISTs
  - Theo-phylline
  - Cromolyn
  - Ipra-tropium
  - Tio-tropium
- 2010's
  - PREVENTION including [gene therapy]