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|  | **program Information** | | |
| **NO.** | |  | |
| **Program Type** | | Degree Based …………….....  Nondegree-Based ……..…. | □  🗹 |
| **Level of Study** | | Undergraduate ………..……  Master …………………..……...  PhD ………………………..…….  Post Doc …………………..…..  Speciality ………………..…….  Subspeciality …………………  Fellowship ……………..……..  Short term Course ………… | □  □  🗹  🗹  🗹  🗹  🗹  □ |
| **School** | | Medicine | |
| **Department** | | Physiology | |
| **Major/ Name of Program** | | Airway hyper-responsiveness | |
| **Keyword(3 Words)** | | Airway hyper-responsiveness, Metacoline, stimuli | |
| **Language Requirment** | | English | |
| **Admission Requirment** | |  | |
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| **Description (500 words)** | | Airway hyper-responsiveness (AHR) to different stimuli is the hallmark of asthma also seen in COPD patients. It means that different stimuli at a low dose, which is not affected by airway diameter in normal individual, can cause airway constriction in asthmatic patients. Measurement of airway hyper-responsiveness is one of the best diagnostic tools in diagnostic of asthma disease in early stage. Airway responsiveness could be measured using different Pharmacological agonists such as methacholine and histamine, cold air, hypo and hyper osmotic solutions as well as other stimuli. To measure airway responsiveness, increment dose or concentrations of the stimuli should be administered usually by inhalation root, ,measuring a Pulmonary function test (PFT) indicating airway diameter such as forced expiratory volume in one second (FEV1) or specific airway conductance (sGaw), constructing of dose (or concentration) response curve to stimuli and determination of dose (or concentration) causing specific reduction of measured PFT such as PD20 or PD35 (PC20 or PC35). | |
| **Complete Description** | | AHR to different stimuli including Pharmacological agonists and other stimuli is the hallmark of asthma but is also seen in COPD patients. It means that different stimuli at a low dose which is not affected by airway diameter in normal individual can cause airway constriction in asthmatic patients. This is the reason when asthmatic patients exposed to low cold air, the environmental or food stimuli, they will get airway constriction and difficult breathing. Measurement of airway hyper-responsiveness is one of the best diagnostic tools in diagnostic of asthma disease in early stage. However, it is seen in COPD patients as well as other respiratory diseases and even in heart diseases. Airway responsiveness could be measured using different Pharmacological agonists such as methacholine and histamine, cold air, hypo and hyper osmotic solutions as well as other stimuli. To measure airway responsiveness, increment dose or concentrations of the stimuli should be administered usually by inhalation root in a specific time intervals. After a defined period of administration of each dose or concentration of stimuli, a Pulmonary Function Test (PFT) indicating airway diameter such as forced expiratory volume in one second (FEV1) or specific airway conductance (sGaw) should be measured. When the final dose or concentration of stimuli was administered and PFT was measured, a dose (or concentration) response curve to stimuli should be constructed. From dose (or concentration) response curve, a dose (or concentration) causing specific reduction of measured PFT such as PD20 or PD35 (PC20 or PC35) should be determined as the criteria of AHR. If This criterion was lower than a defined unit, it will indicate AHR. | |
| **Program Detail** | | Definition of AHR  History  Different stimuli used for measurement of AHR  Method of measurement of AHR:  Method of measurement of AHR using sGaw  Method of measurement of AHR using FEV1  Method of measurement of AHR using dose of stimuli and determination PD20 or PD35  Method of measurement of AHR using concentration of stimuli and determination PC20 or PC35  Method of measurement of AHR using Pharmacological agonists such as methacholine and histamine  Method of measurement of AHR using cold air  Method of measurement of AHR using hyper or hypotonic solutions  Method of construction dose (or concentration) response curve  Method of determination of PD20 or PD35 (PC20 or PC35)  Interpretation of AHR:  In asthma  In COPD  In other respiratory diseases  In heat diseases  Using AHR for Research purposes  In Human  In animal  In vivo  In vitro | |