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|  | **program Information** |
| **NO.** |  |
| **Program Type** | Degree Based …………….....Non degree-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** |  |
| **Contact Information** | Phone : +98 51 3882 8565 |
| Fax : +98 51 3882 8565 |
| Mobile : +98 915 116 3854 |
| Email : boskaadymh@mums.ac.ir |
| Address : Dept. of Physiology, School of Medicine, Mashhad University of Medical Sciences, Azadi Sq., Mashhad, Iran  |
| Contact Person Name : Prof. Mohammad Hossein Boskabady |
| **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 AHRHistoryDifferent stimuli used for measurement of AHRMethod of measurement of AHR:Method of measurement of AHR using sGawMethod of measurement of AHR using FEV1Method of measurement of AHR using dose of stimuli and determination PD20 or PD35Method of measurement of AHR using concentration of stimuli and determination PC20 or PC35Method of measurement of AHR using Pharmacological agonists such as methacholine and histamineMethod of measurement of AHR using cold airMethod of measurement of AHR using hyper or hypotonic solutionsMethod of construction dose (or concentration) response curveMethod of determination of PD20 or PD35 (PC20 or PC35)Interpretation of AHR:In asthmaIn COPDIn other respiratory diseasesIn heat diseasesUsing AHR for Research purposesIn HumanIn animalIn vivoIn vitro |