

hyperthyroidism may have regulatory effect in inflammatory system and it possibly can be used in treatments for hyperthyroidism.

A06: Respiratory physiology

A06-1

The effect of ML204, a blocker of TRPC4/5 on cholinergic responses in mouse bronchus

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The TRPC3 is expressed in animal and human airways, where it has been implicated in mediating contraction in response to cholinergic agonists (1). Although other members of the TRPC family are also expressed in airway, their potential roles have not yet been investigated. As there is strong evidence that TRPC4 is involved in mediating cholinergic contractions in murine intestinal smooth muscle (2), we tested if the same might be true in airway smooth muscle. Rings of 2nd and 3rd order bronchi from mice were mounted in organ baths for in vitro tension recording. Concentration-effect relationships were recorded for carbachol (CCh, 100 nM – 10 µM) before and after exposure to ML204 (3 or 10 µM), a selective blocker of TRPC4 & TRPC5 channels (3). ML204 was effective at blocking the responses, especially at the lower concentrations of agonist (100 & 300 nM). Similar results were obtained when responses were evoked by electrical field stimulation (EFS) of intramural nerves at frequencies of 0.5 – 8 Hz, where the responses to the lower frequencies were greatly reduced by the drug. When the CCh and EFS responses were repeated in bronchi from mice lacking in functional TRPC4 channels (TRPC4 KO), they were similar to those in wild type mice. Moreover, when ML204 was applied in the TRPC4 KO preparations, it blocked CCh and EFS evoked contractions as in wild type. We conclude that the 1) TRPC4 channels are not essential for mediating bronchial contractions in response to cholinergic stimuli and 2) the blocking effect ML204 was mediated either by blocking TRPC5, or via a non-specific mechanism.

References

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A06-2

Radon in the exhalation air of patients in radon therapy

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Question: With the collection of time-resolved data of radon activity in the exhaled air of voluntary probands exposed to radon (Rn) in treatment facilities in Gastein, a model of the distribution of Rn222 inside different body compartments shall be established. **Methods:** During Rn therapy patients are exposed to Rn rich thermal water that diffuses through the skin into body tissues and the blood stream. Rn is transported by the blood to the lungs, where it will be exhaled. The challenge was to determine low radon activity concentrations in the exhaled air and to monitor the fast temporal changes of Radon activity concentrations in the exhaled air while bathing. Probands in bathtubs inhaled fresh, radon free outdoor air (<50Bq/m³) through a hose attached to a tight mask. The exhaled

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Poster Session A

air was sampled in two min to six min intervals and stored in gas-tight metallized bags for subsequent measurement with Lucas cell technology. **Results:** Rn concentrations in bathtubs between 710 and 955 kBq/m³ for a total exposure of 20 minutes were applied. Immediately after the onset of the exposure, the Rn concentration in the exhaled air sharply increased and reached up to 8300 Bq/m³ by the end of the exposure. Normalization of the results to the Rn activity concentration in water and to the weight of the test persons yielded similar results for all persons between 72 and 108 Bq/(m³.kg/MBq/m³). **Conclusion:** The uptake of radon via the skin, its transfer to the blood, its subsequent distribution among human organs via the blood stream and its final exhalation through the lungs is simulated by the multicompartiment model RADMOD. In this model, human organs and tissues are represented by nine compartments, which are connected through the arterial and venous blood compartments.

A06-3

Correlation between Muscle Mass loss and spirometric abnormalities in COPD

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Introduction: Loss of Muscle Mass (MM) and strength developed by Limb and respiratory muscle often observed in advanced stage of COPD reduce physical capacity and lead to disability. These abnormalities were attributed to a myriad of factors, including mainly dyspnea, systemic inflammation, energy imbalance, corticosteroid medications and oxidative stresses.

Aim: the principal objective of this study was to evaluate the correlation between Muscle Mass reduction (MM) and spirometric abnormalities in COPD patients.

Methods: Our cohort study included 46 volunteer male COPD patients. Interrogation, slow and forced spirometries, bronchial obstruction reversibility and MM measurement (bioelectric impedance) were performed in our study group.

Results: The average values of age and percentage of MM were respectively 60±19 years and 35.5±3.8%. Spirometric data interpreted conforming to GOLD 2017 recommendations revealed that 76 % of obstructive defects are classified in stage 3 and 4. Significant correlations (p<0.05) were found between MM and these following parameters: difference between Low and Forced Vital Capacity as indicator of trapping air volume and FEV1 post bronchodilator as indicator of severity of airway limitation.

Conclusion: According to previous data, this study confirmed that MM loss is strongly correlated to severity grade of COPD and will be considered as indicator of disability. Early diagnosis, respiratory rehabilitation and dietary management must be systematically into COPD management strategies in our country to improve quality of life of patients and reduce healthcare cost.

A06-4

BODE index: an interesting survival prediction tool in obesity?

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Introduction: Obesity is a worldwide epidemic disease associated with systemic complications and increased mortality and morbidity. In respiratory system, accumulation of Fat Mass particularly in thorax and abdomen impairs respiratory mechanics and may cause dyspnea and intolerance to exercise in severe cases.

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