Comorbidities in Obstructive Lung Disease in Korea; Data from the Fourth and Fifth Korean National Health and Nutrition Examination Survey

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Background: Comorbidities can occur frequently in patients with airflow obstruction and influence mortality and morbidity independently, deserve specific treatment. So it is increasingly recognized that many patients with chronic obstructive lung disease (COPD) have comorbidities that have a major impact on quality of life and survival.

Methods: We used data obtained in the six years (2007-2012) of the Fourth and Fifth Korean National Health and Nutrition Examination Survey (KNHANES IV-VI). Among 50,405 subjects, 16,151 subjects aged over 40 years who performed spirometry adequately were included in this study. Airway obstruction was defined as FEV1/FVC<0.7, and GOLD stage was used to evaluate the severity of airway obstruction. The statistical analyses were carried out using SAS 9.2 (SAS Institute Inc.).

Results: Of all 16,151 subjects (43.2% male; 56.8% female), the mean age was 57.1 for men and 57.2 for women. Among them, 13.1% had obstructive lung function, 11.3% had restrictive lung function, and 75.6% was normal lung function. Among reviewed retrospectively. For inpatients program, initial assessment were done by rehabilitation physician and individualized PR programs were prescribed considering patient's exercise capacity. PR program included aerobic exercise for 30 minutes, resistance training for secretion management using acapella, flutter, PEP device, and VEST device training for secretion management using acapella, flutter, PEP device, and VEST.

Conclusions: Overall, it is similar to the researchers which were conducted earlier. It showed prevalence of hypertension is common comorbid disease in COPD patients. Also, DM, hyperlipidemia and hypertriglycemia are less common in subject with severe obstructive pulmonary disease (COPD). We report our experiences to operate PR program for COPD patients. 18 patients (11.7%) refused to practice PR during PR program. Eighteen patients (11.7%) refused to practice PR.

Effect of Adipose-Derived Stem Cells (ASCs) via Intra-pleural Route in Elastase-Induced Emphysema Mice

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Background: Stem cell treatments via intra-venous route were reported to restore emphysema in mice model. In these mice model, a serious adverse event, sudden death was recognized immediately after the infusion of stem cells. So we tried a different route of stem cell infusion via intra-pleural route and evaluated the effect of adipose-derived stem cells via intra-pleural infusion in elastase-induced emphysema mice.

Methods: Mouse emphysema model was developed in C57BL/6 mice with the intratracheal injection of elastase(0.4 units/mice). 1x10^5 of ASCs were infused via intra-pleural route at 1week after elastase injection in C57BL/6 mice. Histological analysis of lung tissue was performed with the measurement of mean linear intercept (MLI) at 1week after ASCs intra-pleural infusion.

Results: Elastase induced emphysema in these mice model (mean standard deviation of MLI: 122 μm ± 17 μm, n=4) for elastase-injected mice, n=4 vs. 57 μm ± 1 μm, n=2 for control mice, n=2.) We observed the restoration of alveolar destruction by the infusion of adipose-derived stem cells via intra-pleural route in elastase-induced emphysema mice (MLI for ASCs-treated mice via intra-pleural route, 88 μm ± 4 μm, n=4 vs. only elastase-injected mice 122 μm ± 17 μm, n=4, p<0.0028).

Conclusions: Intra-pleural route may be a candidate route of the stem cell treatment for lung diseases.

Experience of Pulmonary Rehabilitation in Patients with COPD in Regional Pulmonary Center

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Background: Pulmonary rehabilitation (PR) has been demonstrated to reduce dyspnea, increase exercise capacity, and improve quality of life in individuals with chronic obstructive pulmonary disease (COPD). We report our experiences to operate PR program of COPD in our PR clinic which belongs to Regional Pulmonary Center in Chun-Buk area.

Methods: From March to June 2014, hospital records of patients in our PR clinic were reviewed retrospectively. For inpatients program, initial assessment was done by rehabilitation physician and individualized PR programs were prescribed considering patient’s exercise capacity. PR program included aerobic exercise for 30 minutes, resistance training using elastic bandage, breathing retraining (diaphragmatic and pursed lip breathing), device training for secretion management using acapella, flutter, PEP device, and VEST (high frequency chest wall oscillation), and respiratory muscle training. Outpatient’s PR program was conducted as hospital based PR or home based PR for 8 weeks.

Results: In our PR clinic, among total 177 patients, we consulted for PR, 84 (54.5%) was COPD with acute exacerbation (AE) (Table 1). No serious complications were developed during PR program. Eighteen patients (11.7%) refused to practice PR due to personal reasons. For outpatient clinic, eighteen (56.3%) of 32 stable COPD patients were included (Table 1). Characteristics for COPD patients who received PR program were described in Table 2. Among these COPD patients, 34.3% performed hospital based PR, 34.3% home based PR, 20% home-based PR with weekly or every two weeks hospital visit, and 11.4% was missed follow up.

Conclusions: For 4 months, patients who underwent PR were gradually increased. Since the program has been accepted essential, non-medical treatment for COPD, PR should be included to COPD treatment. Also, Korean researches about clinical benefits of COPD management would be necessary to settle down PR in Korea.

Neutrophil to Lymphocyte Ratio to Predict Clinical Outcomes in Patients with Community Acquired Pneumonia

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Background: The neutrophil-lymphocyte count ratio (NLR) is an emerging inflammatory marker. Recently, several studies have demonstrated its predictive power in several infectious diseases. We herein sought to the prognostic value of serial NLR measurement in patients with community acquired pneumonia.

Methods: A total of 177 patients with suspected lower respiratory infections who were admitted to the emergency department of the Dong-A university hospital were enrolled. Serum samples for NLR were collected at admission and at hospital day 4. The NLR was defined as the absolute neutrophil count divided by the absolute lymphocyte count.

Results: The NLR at day 4 provided moderate prediction of clinical stability at day 4 (AUC: 0.749, 95% CI: 0.668 to 0.831, p <0.001) and mortality (AUC: 0.740, 95% CI: 0.615 to 0.865, p =0.001), whereas the NLR at admission did not show significant predictive value. A decrease in NLR between admission and day 4 was present in 84.1% (111 of 132) of patients who were stabilized at hospital day 4 and in 51.1% (22 of 45) of patients who were not stabilized (p <0.001). An increase in NLR occurred more frequently in patients who died of pneumonia than patients who recovered (58.8% vs. 20.9%, p = 0.002). A change in NLR was found to be significant and independent predictor of clinical stability at hospital day 4 (OR: 4.88, 95% CI: 2.27 to 10.52, p <0.001) and mortality (OR: 4.01, 95% CI: 1.39 to 12.03, p = 0.019) after adjusting for age, co-morbid illness.

Conclusions: The NLR, especially a change of measurements, was a useful laboratory marker to predict clinical stability and mortality in patients with community acquired pneumonia.