ABSTRACT

TITLE:

PULMONARY FUNCTIONS IN TYPE 2 DIABETIC PATIENTS AND ITS CORRELATION WITH FACTORS AFFECTING GLYCEMIC STATUS.

AUTHORS: Dr. Bhavya.R.L, Dr. Nagashree.R

AFFILIATION: Department of Physiology, PSG Institute of Medical Science and Research, Coimbatore, MGR University.

INTRODUCTION:

In April 2016 WHO released a diabetic country profile, according to which India will be a world diabetic capital in 2025. An estimate by International Diabetes federation (IDF) says that by 2030 around 87 million Indians will become diabetic. Diabetes mellitus (DM) is a metabolic disorder, the long term effects of which include failure and dysfunction of various organs. There is a convincing causal relationship between diabetes, micro and macro vascular complications. However, the pulmonary complications due to diabetes have poor documentations with variable results. Collagen and elastin which forms the major tissue proteins of lung interstium are altered due to accumulation of advanced glycation end products due to hyperglycemia, which affects the pulmonary functions. Spirometry is a simple and useful tool to assess the lung function.
AIM:

To assess the pulmonary functions of type-2 diabetic patients and compare it with age and body mass index matched healthy individuals. To correlate the lung functions with BMI (Body mass index) and HbA1c (glycosylated hemoglobin).

METHODOLOGY:

- Sixty subjects of age group 30 – 60 years, were enrolled in this study. Of the sixty subjects thirty were type-2 diabetic subjects attending the outpatient department of Endocrinology and Medicine and the remaining thirty were age and BMI matched normal healthy adults, who were enrolled under the control group. After giving a pre-test advice, all the participants’ were made to undergo spirometry. The datas were analysed using SPSS software version 19. All the values were expressed as mean ± SD (Standard deviation). Students’ t test was applied to compare the means of quantitative datas’ like FEV1/FVC, FVC, FEV1, FEF25-75 %, PEFR. The p values were interpreted as :
  
(i) p > 0.05 was considered statistically insignificant.
  
(ii) p < 0.05 was considered statistically significant.

This study also compared and correlated the pulmonary functions with glycemic control (HbA1c) and body mass index of the participants involved in the study.
RESULTS:

The analysis showed a marked reduction in the values of FVC and FEV\textsubscript{1} with a p value of 0.000 and reduction in PEFR with a p value of 0.025 in diabetic subjects as when compared to non-diabetic healthy individuals, which was statistically significant. The comparison of pulmonary functions with glycosylated hemoglobin did not show any significant difference in lung function parameters with the p value was > 0.05. But the correlation of HbA1c with pulmonary function tests’ showed a slightly negative correlation for FVC and FEV\textsubscript{1}. However this was not statistically significant with a p value of >0.05. The correlation between body mass index and pulmonary function tests’ showed a slight negative correlation for both forced vital capacity and forced expiratory volume at first second. However, this was not statistically significant as the p value was > 0.05.

CONCLUSION:

The study showed a marked reduction in the values of FVC, FEV\textsubscript{1} and PEFR in diabetic subjects as when compared to non-diabetic healthy controls with a restrictive pattern of lung disease in diabetic subjects. This is attributed to the non-enzymatic glycosylation of collagen and elastin that affects the lung volumes and capacities, which can be easily detected by spirometry.

KEY WORDS: Diabetes mellitus, pulmonary functions, Spirometry.