

Gyanshankar Mishra

Study of pulmonary function tests in patients of diabetes mellitus (NIDDM) with chronic obstructive pulmonary disease or asthma

Master's Thesis

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Topic :-

**STUDY OF PULMONARY FUNCTION TESTS IN PATIENTS OF
DIABETES MELLITUS (NIDDM) WITH CHRONIC OBSTRUCTIVE
PULMONARY DISEASE OR ASTHMA**

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Introduction

Diabetes is a systemic disease. The presence of an extensive pulmonary microvascular circulation and abundant connective tissue raises the possibility that lung may be a target organ of the pathologic process induced by chronic hyperglycemia.

Twenty years from now it is envisaged that there will be a worldwide incidence of more than 330 million diabetic patients and majority of whom will be afflicted with type 2 diabetes [1]. Prevalence of diabetes in adults worldwide was estimated to be 4% in 1995 and to rise to 5.4% in 2025 [2]. The major part of this numerical will occur in developing countries. There will be a 42% increase, in the developed countries and 170% increase, in the developing countries. Thus, by the year 2025, > 75% of people with diabetes will reside in developing countries, as compared with 62% in 1995. The countries with the largest number of people with diabetes are, and will be in the year 2025, India, China and the U.S. In developing countries, the majority of people with diabetes are in the age range of 45-64 years [2]. A recent meta analysis of epidemiological studies on diabetes in India revealed prevalence rate of Diabetes in India among adults in both urban and rural population to be 62.47 per thousand [3].

The interest in the relationship between diabetes and obstructive lung diseases has been pursued only recently [4-7]. The prevalence of asthma is significantly higher in patients with type II diabetes mellitus (DM), independent of other comorbid conditions [4]. Chronic obstructive pulmonary disease (COPD) may be a risk factor for developing type 2 diabetes [5]. Also hyperglycemia is associated with adverse clinical outcomes in patients with acute exacerbations of COPD [6]. The exploitation of the potential for interventions that improve mortality and even reverse the course of the disease in COPD will require a better understanding of the relationship of COPD to novel risk factors, such as hyperglycemia and diabetes [7].

Another aspect to this relationship between diabetes and obstructive lung diseases is the applicability of newer and novel therapeutic approaches in this subgroup of patients. The effect of inhaled insulin in subjects with diabetes and chronic lung disease, such as asthma or COPD, is of particular interest because these diseases are quite common, and it is likely that

patients with asthma or COPD who are poorly controlled on oral agents and are reluctant to start subcutaneous insulin would benefit from inhaled insulin to improve their glucose control [8].

Also several prospective studies have found that impaired pulmonary function may increase the risk for developing diabetes [9].

With this background, this study was undertaken to determine the pulmonary function parameters in patients of diabetes mellitus (NIDDM) with COPD or asthma.

Aims & Objectives

1. To evaluate the status of pulmonary functions (pulmonary function tests – spirometry with reversibility, DLCO, lung volumes including total lung capacity, residual volume, residual volume / total lung capacity) in diabetics (NIDDM) with COPD or asthma.
2. To correlate the pulmonary functions (DLCO and lung volumes) with severity of airflow limitation in diabetics (NIDDM) with COPD or asthma.
3. To correlate FVC% with duration of diabetes in diabetics (NIDDM) with COPD or asthma.